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TRANSACTIONS

OF THE

AMERICAN HOMOEOPATHIC OPHTHALMOLOGICAL, OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

SESSION 1900.

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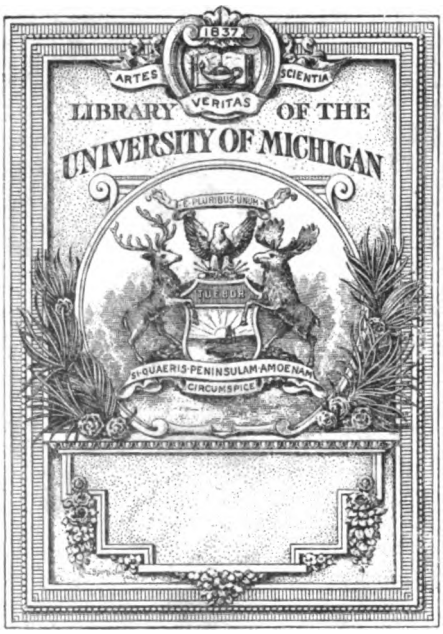

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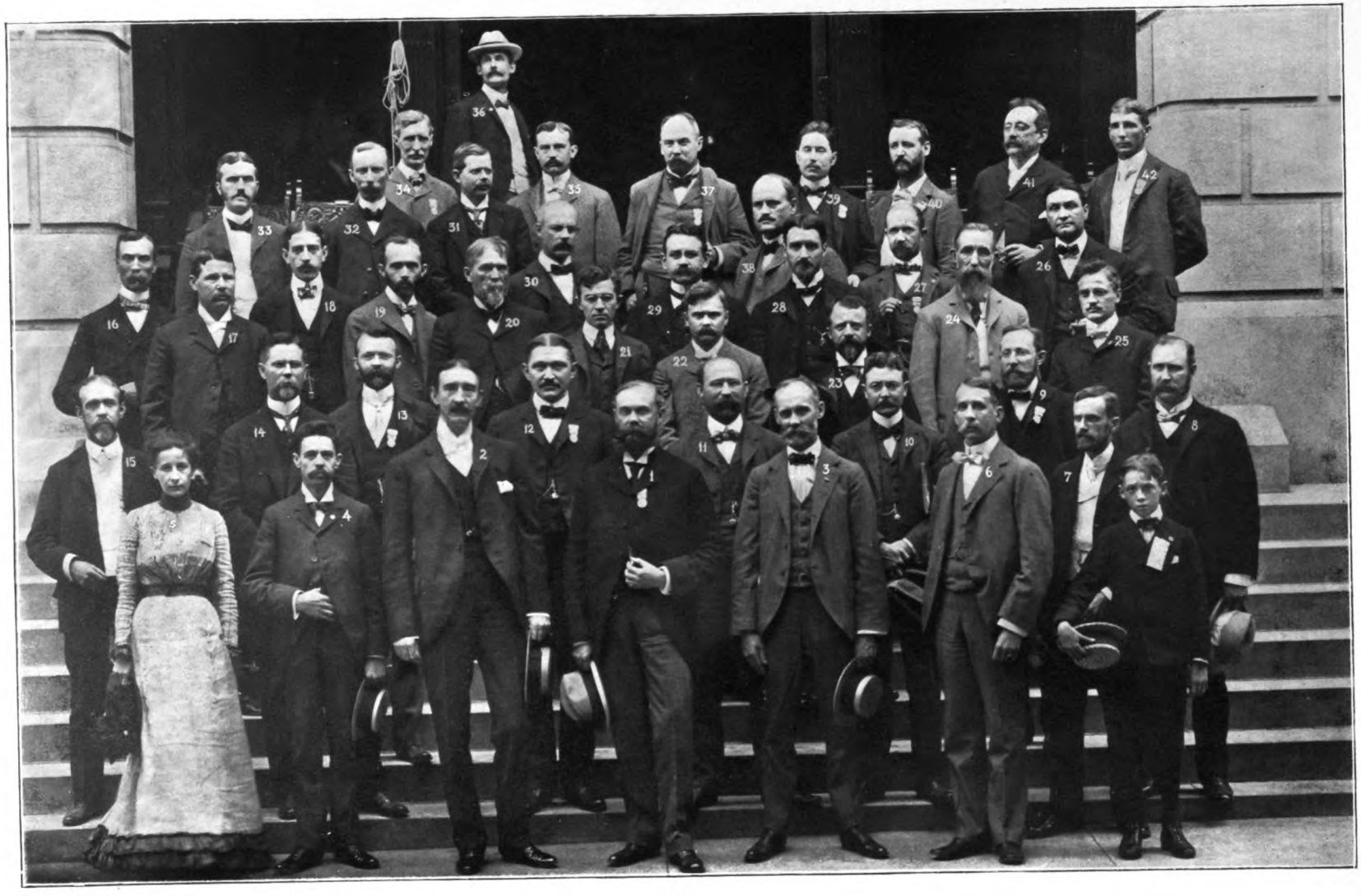

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Group of Some of the Members of the American Homœopathic Ophthalmological, Otological and Laryngological Society Who Were Present at the Thirteenth Annual Session, at Washington, D. C.

1. Dr. Howard P. Bellows, Boston, Mass., *President.*
2. Dr. Thomas L. Shearer, Baltimore, Md., *President-Elect.*
3. Dr. Herbert D. Schenck, Brookyln, N. Y., *Secretary.*
4. Dr. Charles H. Hubbard, Chester, Pa.
5. Dr. Ella G. Hunt, Cincinnati, O.
6. Dr. John B. Garrison, New York, N. Y.
7. Dr. Nathan Smilie, Philadelphia, Pa.
8. Dr. Elmer J. Bissell, Rochester, N. Y.
9. Dr. David W. Wells, Boston, Mass.
10. Dr. C. Gurnee Fellows, Chicago, Ill.
11. Dr. George A. Suffa, Boston, Mass.
12. Dr. Irving Townsend, New York, N. Y.
13. Dr.
14. Dr. Eugene L. Mann, St. Paul, Minn., *Vice-President.*
15. Dr. A. Worrall Palmer, New York, N. Y.
16. Dr. E. D. Brooks, Ann Arbor, Mich.
17. Dr. William M. Simonies, Atlantic City, Iowa.
18. Dr. Henry S. Willard, Paterson, N. J.
19. Dr. Herbert W. Hoyt, Rochester, N. Y.
20. Dr. E. W. Beebe, Milwaukee, Wis.
21. Dr. William W. Blair, Pittsburg, Pa.
22. Dr. Thomas M. Stewart, Cincinnati, O.
23. Dr. F. D. W. Bates, Hamilton, Ontario.
24. Dr. Jeremiah N. Anderson, Toronto, Ontario.
25. Dr. J. H. Harvey, Toledo, O.
26. Dr. Joseph M. Patterson, Kansas City, Mo.
27. Dr. Alton G. Warner, Brooklyn, N. Y.
28. Dr. Roy S. Copeland, Ann Arbor, Mich.
29. Dr. George A. Shepard, New York, N. Y.
30. Dr. George B. Rice, Boston, Mass.
31. Dr. George F. Bagby, Richmond, Va.
32. Dr. F. M. Gibson, Minneopolis, Minn.
33. Dr. George W. McDowell, New York, N. Y,
34. Dr. Daniel A. Mac Lachlan, Detroit, Mich.
35. Dr. George De Wayne Hallett, New York, N. Y.
37. Dr. A. B. Norton, New York, N. Y.
38. Dr. Charles J. Swan, Chicago, Ill., *Vice-President.*
39. Dr. F. Park Lewis, Buffalo, N. Y.
40. Dr. William R. King, Washington, D. C.
41. Dr. Richard K. Valentine, Brooklyn, N. Y.
42. Dr. Benjamin S. Stephenson, Lowell, Mass.

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TRANSACTIONS

OF THE

American Homœopathic Ophthalmological, Otological and Laryngological Society.

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THIRTEENTH ANNUAL MEETING.

WASHINGTON, D. C.,

JUNE, 1900.

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OFFICERS, 1901

PRESIDENT:

THOMAS L. SHEARER, M. B., C. M. (Edin),.....Baltimore, Md.

FIRST VICE-PRESIDENT:

THOMAS M. STEWART, M. D.,.....Cincinnati, Ohio.

SECOND VICE-PRESIDENT:

FRANK DE W. BATES, M. D.,.....Hamilton, Ontario.

SECRETARY:

HERBERT D. SCHENCK, M. D.,.....Brooklyn, N. Y.

TREASURER:

C. GURNEE FELLOWS, M. D.,.....Chicago, Ill.

CENSORS:

WILLIAM W. BLAIR, M. D.,.....Pittsburg, Pa.
F. M. GIBSON, M. D.,.....Minneapolis, Minn.
HERBERT W. HOYT, M. D.,.....Rochester, N. Y.
JOSEPH M. PATTERSON, M. D.,.....Kansas City, Mo.
GEORGE A. SUFFA, M. D.,.....Boston, Mass.

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PROCEEDINGS

OF THE

THIRTEENTH ANNUAL MEETING OF THE AMERICAN HOMŒOPATHIC OPHTHALMOLOGICAL, OTOLOGICAL AND LARYNGOLOGICAL SOCIETY, HELD IN WASHINGTON, D. C., JUNE 16, 18 AND 19, 1900.

FIRST DAY—AFTERNOON SESSION.

THE society met in the Shoreham, and the first session, with 42 members present, was called to order by the president, Dr. Howard P. Bellows, at 2:45 P. M., Saturday, June 16, 1900. The first vice president, Dr. C. Joseph Swan, and the second vice president, Dr. Eugene L. Mann, were on the platform with the president during the opening session. Dr. Swan presided during the delivery of the president's address, and Dr. H. D. Schenck, the secretary, recorded the proceedings. Dr. Bellows at once presented the president's address.

Dr. A. B. Norton: After listening to this most interesting and scholarly address, I regret that our by-laws do not provide for a committee on president's address. I, therefore, move that the first vice president of the society appoint a committee of three to act on the president's address. Carried. Drs. G. B. Rice, B. W. James and E. W. Beebe were made such a committee.

The President: I thank you for this kind action which you have taken in connection with my address.

Before proceeding with the regular routine of business which comes before us this afternoon, I want to make one or two remarks. The first is in regard to our program. Every one of the papers announced upon this program is already in the hands of our secretary, with one exception. That paper, we know, is surely to arrive on Monday morning next, and will be called for in the course of the session. There is to be noted a little difference from past years in this respect that everything is here.

In regard to the series of papers, some sixteen of which were arranged upon special subjects, all were received, with one exception. That will not be received, unfortunately, because of the illness of the pro-

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posed writer. That, however, was one relating to remedial action and so is, in a measure, independent of the other special papers. The others in series are all here and it has been determined by the Executive Committee that, unless objection is made on the part of the society, in the case of these serial papers, all should be read, even though the authors may not be in attendance. This is because of the relation of these papers, one to the other. Also in the case of one or two other papers, which are in a measure, supplementary to one another. I will ask for the reading of such papers by the secretary in case of the author being absent, unless objection is made by the society. Aside from these serial papers, most of which I hope will be read by the members themselves, the other papers on the program will be read by the authors, if present. After all writers have read their papers, if time still remains, those which you may desire to hear will be read by the secretary to fill the time at our disposal. As the opening of the discussion on all papers has been provided, it is desirable that if a written paper has been prepared and forwarded to the secretary, that it should be read even though the author may not be present. This was also the decision of the Executive Committee, unless objection made by the society will stand.

I might remind you that twenty minutes is allotted to the reader, ten minutes to the one opening and five minutes only to all others taking part in the discussion.

I would like to call attention to the exhibit in the adjoining room, which I hope will be as interesting and full as possible, and that all members present will contribute things which, even in themselves, may seem trivial. It will be of interest to the rest of us and the whole will form an exhibit of gradually increasing size. It is also desirable that, year by year, these exhibits should be made a more prominent feature of our meetings, as they are in Europe. A few of our members have already been misled by the time published in the program of the American Institute for opening our session. In fact, the opening of our session was, according to that program, called at 3 instead of 2:30 o'clock for this afternoon. If you noticed, we opened at 2:45 P. M., dividing the time between the two. Hereafter the members will please note that we will follow the time assigned in our own program.

I now declare this thirteenth meeting of the society open for business.

I would ask those who read and discuss the papers to come to the front, where they can be more readily heard by those in attendance and also by the press representatives.

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REPORT OF THE SECRETARY.

Mr. President and Fellow Members:—

Your Secretary submits the following report of the work of his office for the past year:

The usual arrangements were made for getting the matter for the transactions in shape for publication soon after the meeting. The minutes of the meeting were published in the August number of the official organ, and by that time each member who took part in the discussion had received a copy of the stenographer's notes for correction. Copies of the president's address were sent to the members of the Institute early in the fall as ordered by the society.

As soon as the Institute decided upon the place, and had set a tentative date for its meeting on June 5th, a circular was issued to our members, notifying them of this fact and asking those who had not already replied to the president's request to contribute a paper to forward the title of their papers. The result of the President's appeal was the magnificent list of 59 titles, which were published in the April number of the official organ. Of this number eleven, through the illness of the authors or their families, or because of their absence from home, were not written. The other 48 are on the program, which is herewith presented as the order of business for this session.

The by-law and general request for papers to be in the hands of the secretary by May 1st were helpful, and resulted in a much larger number of papers being promptly returned than last year. Only about half the final number, however, were sent before the 20th of the month.

If the members could realize the enormous amount of work and anxiety that would be saved the officers who have charge of making the meetings successful by a prompt compliance with this reasonable request, or, at least, by notifying them of their intentions regarding their papers. The secretary must congratulate the society upon the loyalty and enthusiasm with which each member who was to take part did his work. A much smaller number of papers than ever before were returned by those requested to lead in their discussion. Only those were sent back where illness or other weighty reasons prevented the member from doing his share.

The work of this office has grown considerably the past year. The preparations for this meeting have required the secretary to write over two hundred letters, almost all of which were to the members. This is a large burden to add to the work of a member in active practice.

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On June 5th the program of this meeting, with a circular giving the railroad rates and such other information as seemed necessary, were sent to all our members and to 800 of the members of the Institute, as was done last year.

In issuing the transactions, a heavier grade of paper was used the past year, and a change made, so that each paper began at the top of the page. This added much to the size and appearance of the volume and somewhat to its cost.

One fact that developed in issuing the Transactions that ought to receive the attention of the society and be arranged on a permanent basis was the publication of papers presented to this society in other journals before they appeared in the official organ. This resulted in some dissatisfaction and the exclusion of one paper from the Transactions.

As there has been an occasional criticism regarding the publication of the society papers *only* in its official organ, the secretary invited estimates on duplicating our last volume of Transactions from three of the largest publishing houses in New York and Brooklyn, with the following results: The Trow Directory, Printing and Bookbinding Company, of New York City, $611.00; the Rooney and Otten Printing Company, of New York City, $393.00; the Brooklyn Daily Eagle Printing Company, $525.00. Two of these firms have been publishing the Transactions of the Institute in recent years.

The total cost to the society last year for the same work was $194.54. The total receipts for dues last year were $410. The total expenses of the society last year, outside of the cost of Transactions, i. e., for stenographers' work, the printing and mailing of circulars and the Transactions, and the secretary's and treasurer's expenses, etc., amounted to $354.28.

It has been found necessary by the Homœopathic Medical Society of the State of New York to allow its secretary two hundred and fifty ($250) dollars per year for editing and seeing its Transactions through the press. Their volume is not much larger than ours and contains about the same number of papers, and, as the arrangement for the discussion of their papers is in the hands of the bureau chairman, the work of the society is not heavier than that of your same officer. This sum would probably be a fair amount to add to these expenses in undertaking to publish our own transactions. The balance, according to the past year's expenses and receipts left applicable to the publication of the Transactions, is $55.72, or a deficit of $138.82, by our present arrangement this year of publishing them by the aid of the Homœo-

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pathic Eye, Ear and Throat Journal, or by publishing our own transactions by the lowest estimate given, with a deficit of $337.28.

In order to publish our own Transactions, which every one agrees would be the most satisfactory method, we must, therefore, increase our annual dues to $7. This increase of our dues at present would result in keeping out many new members and in reducing our present membership from 20 to 25 per cent., in the judgment of the secretary.

As no journal would accept the papers of the society for publication if they were to be previously published in other journals, it seems necessary to do one of three things:

1st. To publish all the papers of the society exclusively in one journal; or,

2d. To increase our annual dues to at least $7; or,

3d. To give up our volume of Transactions.

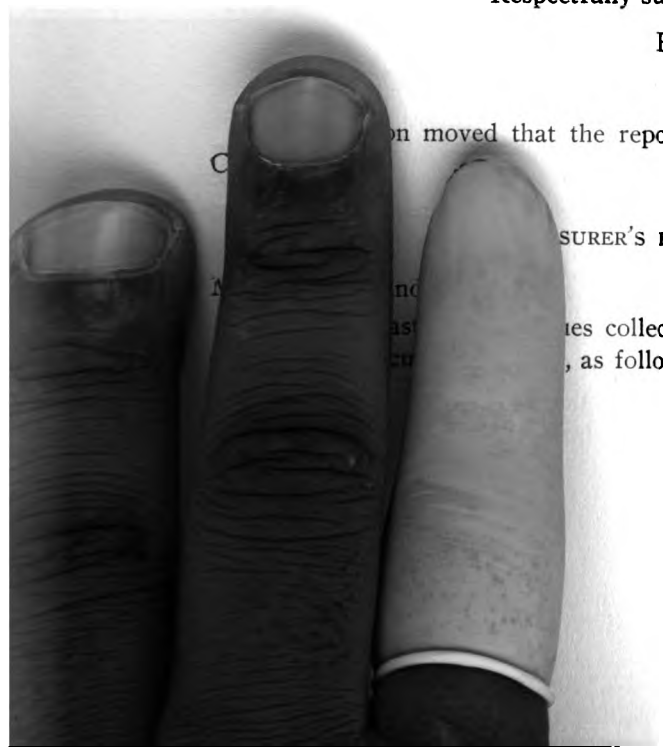
The Homœopathic Eye, Ear and Throat Journal has always freely given the officers the use of its pages and done everything in its power to promote the interests of this society, and its work in publishing our Transactions has been eminently satisfactory. Some action ought to be taken at this meeting to make some permanent disposition of this matter.

The present membership of the society is 145 active members, 2 honorary members and 3 corresponding members. Up to the present time 15 applications for membership have been received.

Respectfully submitted,

Herbert D. Schenck, M. D.,

Secretary.



n moved that the report of the secretary be adopted.

SURER'S REPORT.

ies collected amounted to $410, and the , as follows:

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AMERICAN HOMŒOPATHIC, OPHTHAL., OTOL., AND LARYNGOL. SOCIETY IN ACCOUNT WITH

DR. C. H. HELFRICH, *Treasurer.*

Balance	$206 15	Geo. B. Coch, stenographer	$121 73
Dues collected	410 00	Miss Marvel, stenographer	45 39
		Pusey & Troxell, printing	6 25
		Treasurer's sundries	7 08
		Mailing bills	4 85
		G. A. Pulis, printing	5 75
		" " "	4 00
		" " "	14 25
		Secretary's sundries	23 94
		Rooney & Otten, printing	21 00
		" " "	228 76
		Balance	133 15
	$616 15		$616 15
Balance *June 11, 1900.*	$133 15		

Despite this discrepancy I am able to report a balance of $133.15, though this may be reduced by the payment of some outstanding unpaid bills which have not as yet been presented.

Thus it will be seen that it is necessary for us to practice a little more economy lest we become bankrupt. This is not intended as a criticism, but, rather, in the light of a word to the wise. The receipts are sufficient to carry the society along nicely, with a little care, so there is no cause for alarm.

The outstanding assets of the society are shown by the following summary:

Members owing 1 year's dues, 33;
Members owing 2 years' dues, 18;
Members owing 3 years' dues, 19.

I would call your attention to the nineteen members who are three years in arrears. Under the by-laws they should be dropped, but owing to their number I would suggest some action on the part of the society delaying such a step until next year. In the meantime they can be written to again, and many, no doubt, will pay their dues. For obvious reasons I do not present a list of their names.

Charles H. Helfrich, M. D.,
Treasurer.

Dr. A. B. Norton moved that this report be referred to an Auditing Committee. Carried. The chair appointed Drs. C. Joseph Swan, W. W. Blair and G. M. Haywood such a committee.

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The other committees appointed by the chair were:

1st, as a Press Committee, Drs. W. R. King, C. Gurnee Fellows and Leigh Y. Baker.

2d, as a Committee on Attendance, Drs. D. W. Welles, C. L. Rumsey and J. L. Moffat.

The President: It is now my painful duty to announce officially the death of two of our members since our last meeting. I refer to Dr. Charles E. Jones, of Albany, N. Y., and Dr. Clarence E. Beebe, of New York City. It is fitting that we should adopt suitable resolutions upon the death of these members, and I will appoint, unless there is objection, committees to prepare resolutions. Drs. F. Park Lewis, E. J. Bissell and J. I. Dowling will be the committee to prepare a memorial upon the death of Dr. C. E. Jones, and Drs. G. W. McDowell, J. B. Garrison and I. Townsend upon that of Dr. C. E. Beebe.

Dr. W. R. King then presented, after an explanation, the following standing resolutions:

"Resolved, That all papers presented before this society shall become its property and be first published in its official organ; and furthermore, be it

"Resolved, That the Homœopathic Eye, Ear and Throat Journal be continued as the official organ of the society." Carried unanimously.

Dr. W. R. King then moved, in order that all members may understand the necessity, from financial reasons, of continuing the publication of our transactions in the present manner, that that portion of the secretary's report covering the publication of the transactions of the society, together with the standing resolution just adopted, be sent out as a circular letter at the beginning of next year to every member of the society; and, furthermore, that the above standing resolution be printed at the head of all announcements issued by the secretary.

Dr. E. J. Bissell moved to amend, by adding after the words "all announcements" the words "soliciting papers," which, he said, would accomplish the purpose of the resolution.

Dr. B. W. James asked if work for the secretary and expense to the society could not be saved by publishing the report in the official organ alone.

The secretary answered this by saying that his report would appear in a number of the official organ to be issued in July or August, and that it would not be necessary to publish a circular now, but next winter, when the succeeding officers send out requests for papers, that this standing resolution be included in all such circulars, and, in addition,

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a circular be issued at that time containing this part of the secretary's report.

Dr. W. R. King and the one who seconded the motion then accepted the amendment proposed by Dr. Bissell.

Dr. A. B. Norton: In my opinion, it will be wise to send this out as a circular-letter, because printing it in the journal as the official report of the secretary is one thing, but if it is sent out as a personal letter, so that every one can see the arguments and reasons why it is impossible to print our own transactions, there is no opportunity for misunderstanding. The amended motion was then carried.

Dr. A. B. Norton: Under new business, I would like to suggest that the recommendation of the treasurer, in regard to not dropping these gentlemen who are three years in arrears, be considered, and would move that they be continued for one more year, and that we request the treasurer to try again to collect the dues in arrears. Carried.

The secretary called attention to the report of the treasurer that Dr. J. W. Jewett, of New Haven, had presented an application last year and paid his initiation fee and dues. The application never reached the secretary, or the censors, and was not entered in the transactions. No action was taken.

The treasurer presented the resignation of Dr. Chas. C. Boyle, and reported that all dues to date were paid. On motion it was accepted. The president then announced that he would appoint Dr. C. Gurnee Fellows as acting treasurer in the absence of the treasurer, unless there was objection. The appointment was then made.

Dr. H. W. Hoyt moved that by letter, asterisk or dagger the list of members be so arranged that it will show what specialty of the three represented in our society each practice. He said he had lately wanted to refer a patient to a member doing throat work in another city where there were three members, and that he did not know whether or not they all did throat work.

Dr. C. G. Fellows said that he would like to help the Eye, Ear and Throat Journal along, and suggested that members put their cards in the journal. He said he turned to those cards three times a week to hunt up the names, and the cards only cost $5 per year.

Dr. Norton: I would also amend that by adding some distinctive mark to the name of the member of the society who is in attendance at each meeting, so that we know each year who are in attendance at the meetings of the society, as well as the men who are working especially in the eye, ear, nose and throat line.

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Dr. E. J. Bissell said he thought this quite important. He said he referred either to the card in the journal or the list of members in the transactions to find out the names and addresses for the reference of cases, and this little addition would enhance the value of the transactions very much.

The motion as amended was then adopted.

The secretary requested members, when changing their addresses, to promptly notify him. He said there were quite a number of errors in the last list of members which had crept in without his knowledge; that the members had changed their addresses and he was not aware of it until he saw on the letterheads other addresses, sometimes in a different city.

The secretary then read fifteen applications for membership, which were referred to the censors to report on them at the morning session, June 19.

Dr. A. B. Norton moved that the chair be empowered to fill the vacancies in the Board of Censors present, so there may be three, in case the absent censors do not appear.

Dr. E. J. Bissell moved that the courtesies of the floor be extended to all applicants for membership and to visiting physicians during the entire session. Carried. The remainder of the afternoon session was taken up in the reading and discussion of the first four papers on the program, whose authors were all present.

FIRST DAY—EVENING SESSION.

The meeting was called to order at 8:05 P. M. by the president, and the whole session was devoted to the presentation and discussion of the four remaining papers in the program of the afternoon and of three on the program for the evening whose authors were present. Four others were read by title. An adjournment was taken at 10:30 P. M. until Monday, June 18, at 9 A. M.

SECOND DAY—MORNING SESSION.

The meeting was called to order at 9:30 A. M. by the president. The report of the Auditing Committee was then presented by the chairman, who said the accounts of the treasurer were found correct. The report was adopted and the committee discharged. The remainder of the session was taken up in the reading and discussion of four papers whose authors were present and by reading by title two others.

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SECOND DAY—AFTERNOON SESSION.

The meeting was called to order at 2:42 P. M. by the president, who announced that it was necessary to appoint another censor, only two members of the board being present, and according to the resolution passed at the first day's session he filled the vacancy by appointing Dr. G. DeW. Hallet. He also announced that the Executive Committee, by a special arrangement, had attempted to arrange for the presence of a representative of the railroads to sign the certificates of the members of our society tomorrow, so that members would be able to avail themselves of the reduced rates that evening, provided 100 certificates were then in the hands of the Transportation Committee. He also requested that those present who have not handed in their certificates do so, as it is absolutely essential to have one hundred as soon as possible. He said they might be left with the secretary. The president said he wished to call attention to the time occupied in discussion. According to our by-laws, the closing discussion is but five minutes like the other discussions. This morning, owing to the rapt attention which was being paid by the audience, I strained a point in closing the discussion of a paper which I do not wish to become a precedent. Five minutes will be allowed for the closing of discussions, as for all others except the opening.

The remainder of the session was devoted to the presentation and discussion of six of the papers on the program where the authors were present. Two others were read by title and one was deferred. The secretary moved that Dr. C. G. Fellows be requested to edit for publication in the transactions the seventy letters he had received in reply to his letter asking for reports upon the use of remedies in sclerosis of the middle ear. Carried. After the first three papers had been read and discussed, a motion was made by Dr. C. J. Swan that when we adjourn it be to 8 o'clock this evening. This was lost.

THIRD DAY—MORNING SESSION.

The meeting was called to order by the president at 9:37 A. M.

Dr. W. R. King first made an announcement that a photograph of the members would be taken at 1:40 P. M. in front of the Shoreham, so that the publication of the group might be continued this year in the transactions.

The secretary said that as there has been some misunderstanding in arranging for the special rates for this society, that he would move the

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following standing resolution: "Resolved, That the president be requested to appoint at each annual meeting a committee of three members on transportation, who shall act, so far as possible, conjointly with the same committee of the Institute." Carried. Drs. J. L. Moffat, G. M. Haywood and W. B. Kreider were appointed a Committee on Transportation.

Dr. J. H. Harvey, chairman of the Board of Censors, then presented the following fifteen applications for membership, and said the censors recommended their election:

George Franklin Bagby, M. D., 206 East Grace street, Richmond, Va.
William L. Bywater, M. D., Iowa City, Iowa.
Albert Elmer Cross, M. D., 29 Walnut street, Clinton, Mass.
Frederick Wilkinson Colburn, M. D., 35 Newberry street, Boston, Mass.
Clarence S. Elebash, M. D., 118 East 19th street, New York.
W. De Haven Eaches, M. D., 226 Morgan street, Phoenixville, Pa.
W. B. Hughes, M. D., Little Rock, Arkansas.
J. Henry Hallock, M. D., Saranac Lake, N. Y.
J. Martine Kershaw, M. D., 3421 Washington avenue, St. Louis, Mo.
Ralph Irving Lloyd, M. D., 296 47th street, Brooklyn, N. Y.
Emma J. Peasley, M. D., Boston, Mass.
I. Benson Patterson, M. D., 40 Main street, Milford, Ind.
Warren Uel Reynolds, M. D., 320 Manhattan Ave., New York, N. Y.
William M. Semonies, M. D., Atlantic City, Iowa.
H. Wells Woodward, M. D., 1110 L street, Washington, D. C.

Dr. E. J. Bissell then moved that the secretary cast a ballot for the applicants recommended by the censors, which was carried, and they were duly declared elected.

The president in calling for the report of the Committee on President's Address asked Dr. C. J. Swan to take the chair.

Dr. George B. Rice then presented, on behalf of the committee, the following report:

Your committee appointed to act upon the president's address submit the following report:

It is believed that in this scholarly and interesting address are incorporated methods for the improvement of our Materia Medica, the importance of which cannot be overestimated. This society, composed as it is of a large body of energetic and scientific workers, cannot do a

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greater or a more necessary work than to at once practically demonstrate the ideas so ably set forth.

It is the opinion of the committee that if a decisive step in this direction can be taken by our own body, that the result will be such as to cause other sectional organizations to eagerly carry on the work in the definite line in which they may be especially interested.

The committee would suggest that the president select a single standard pharmaceutical preparation for such proving. That he appoint committees composed of representative men from our larger cities to carry on this work, and that a report of the results accomplished be made at our meeting next year.

It is also suggested that a thousand reprints of the address be made, and that copies be sent to such members of our profession as shall be selected by our secretary, and that a report of our proposed work be sent to the chairman of the Materia Medica Bureau of the American Institute for the consideration and approval of this body of therapeutic specialists.

It is only by making a start in this direction, even though it be small, because of lack of funds, that the profession as a whole can be aroused to a comprehension of the *vital necessity* of accomplishing something which shall make for homœopathy what its organizor intended for it, and what it *can* be, a universally acknowledged and adopted scientific truth. Respectfully submitted,

GEORGE B. RICE,
BUSHROD W. JAMES,
E. W. BEEBE,
Committee.

Dr. A. B. Norton moved that the report of the committee be accepted, its recommendations be adopted, and the committee discharged. Carried.

Dr. H. W. Hoyt said that one of the best papers that appeared at Atlantic City, which was accepted as a part of the transactions of the society, did not appear in the printed publication. He said it did not make any difference whether it was a valuable paper or not, but it was valuable, and he would like to know why it did not appear in the transactions.

Dr. A. B. Norton, who asked permission to reply to the question, which was granted by the chair, said:

That the paper referred to did not appear in the translations for the reason that the society, by a previous resolution, had decided

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that all papers should appear in the official organ of the society. This paper was not referred to the official organ for publication until after it had been published in another journal. Of course, no journal can publish papers previously published.

The society at its last meeting received three or four papers that were published in other journals; one paper, after the author's apology before reading his paper, appeared in the transactions by special vote of the society. Another paper was published in another journal, but was previously published in the official organ; therefore, it appeared. The third paper that was published in another journal went into the official organ through an oversight, as it would not have appeared in the official organ or in the transactions if it had been recognized as having previously been published in another journal. The paper omitted did happen to be recognized and, therefore, did not go into the official organ or the transactions.

It is generally understood in all organizations that every paper presented to a society becomes the property of the society. That is a parliamentary rule recognized everywhere. When the society adopted an official organ, as we understand it, the latter is entitled, as the standing resolution adopted at this meeting expresses it, that all papers must be first published in that official organ.

If there is any responsibility, it rests upon the shoulders of the official organ, and that is the reason that the paper that Dr. Hoyt referred to was not published. The author of that paper was informed beforehand that this action had been taken by the society. The only reason that there was any dissatisfaction was that one paper did appear that was previously published, but, as explained, that was published through oversight.

Dr. G. W. McDowell then made the following report for the committee appointed to present a report upon the death of Dr. C. E. Beebe, of New York:

WHEREAS, The members of the O. O. and L. Society, assembled at Washington, D. C., have learned of the death of our colleague, Dr. Clarence E. Beebe, of New York; therefore, be it

Resolved, That in the death of Dr. Beebe this society has lost one of its most valuable members, whose professional attainments have won for him a high place among his brethren; and

Resolved, That we place on record our appreciation of his unblemished career, his eminent ability, both as a physician and as a medical edu-

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cator, whose fidelity to the interests of his patients and his exact and painstaking methods of treatment were worthy of all emulation, the influence of which will long remain as a fitting monument to his character and worth.

J. B. GARRISON,
GEO. W. MCDOWELL,
IRVING TOWNSEND.

Dr. A. B. Norton then moved that the report be adopted and a copy sent to the family of the deceased member. Carried unanimously by a rising vote.

Dr. F. Park Lewis then presented a report upon the death of Dr. C. E. Jones, of Albany, N. Y.

It is with profound sorrow that we are again called upon to record the death of one of our number.

Since our last meeting Dr. Charles E. Jones, of Albany, has passed beyond the cares and duties of earth into the activities of a higher life, beyond the anxieties and responsibilities, beyond the sickness and suffering, the griefs and the sorrows of today, and has solved the great mystery of death.

But while he has gone forward into the brighter and clearer light, he has passed from our fellowship, so that we are no longer cheered by his happy voice nor gladdened by his winning, sympathetic presence, and we miss the friendly intercourse that meant so much to many of us. Dr. Jones had never actively associated himself with the work of this society, as for many years his labors had extended out into the broader lines of general practice; but he was a trained laryngologist, a scholarly physician, a cultured gentleman, and a true friend. We desire to place on the records of this society this expression of sorrow in the loss which we have sustained, and of sympathy with the venerable mother who survives him.

F. PARK LEWIS,
E. J. BISSELL,
J. I. DOWLING.

Dr. B. W. James moved that the report be adopted and a copy sent to the family of the deceased member. Carried unanimously by a rising vote.

Dr. A. B. Norton then presented the following report for the Nominating Committee:

By request of the chairman I present this report, and I would like to preface it with the statement that the members of the committee were

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in session several hours last night and had an adjourned session this morning. The reason for the long deliberation was because we felt that the western section of the country should be represented in the presidential chair. We also felt that there is one department of our society that has not been represented—the throat department—and it was a question whether we should select a western man or a distinctly throat man for president. Finally, we felt that the greatest number would be interested in a throat man, and we, therefore, beg to submit the following candidates for officers for the ensuing year: President, Thos. L. Shearer, Baltimore; vice president, Thos. M. Stewart, Cincinnati; second vice president, F. D. W. Bates, Hamilton, Ont.; secretary, Herbert D. Schenck, Brooklyn, N. Y.; treasurer, C. Gurnee Fellows, Chicago; censors, W. W. Blair, Pittsburg; F. M. Gibson, Minneapolis; H. W. Hoyt, Rochester; J. M. Patterson, Kansas City; Geo. A. Suffa, Boston.

F. PARK LEWIS,
A. B. NORTON,
W. R. KING,
E. J. BISSELL.

On motion the secretary was instructed to cast a ballot for the nominees presented by the committee, who were declared duly elected officers for the year 1901.

Dr. T. L. Shearer was then called upon, and said:

I wish to thank you very much indeed for this honor. I feel it is no light responsibility, in view of the distinguished gentleman who occupies the chair before me, and because our members are increasing, as well as the work of the society moving to a higher plane each year. I feel, therefore, in accepting this responsibility at this time means we must at least maintain our high standard and do a little better than this year if possible, and I promise you to do all in my power to keep up with the traditions of the society.

The secretary then presented two additional names for membership, which were referred to the censors. The remainder of the morning hour was taken up with the reading and discussion of six of the papers on the program for this session and one which was deferred from yesterday. These authors were present. Two papers were also read by title.

THIRD DAY—AFTERNOON SESSION.

The meeting was called to order at 2:37 P. M. by the president, and

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PRESIDENTIAL ADDRESS.

THE RE-PROVING OF THE HOMOEOPATHIC MATERIA MEDICA FROM THE STANDPOINT OF A SPECIALIST.

By Howard P. Bellows, M. S., M. D.,

Boston, Mass.

LADIES and Gentlemen:—It is my privilege, as well as my duty, to address you today, in accordance with our annual custom. Our usage in relation to this address accords me perfect freedom in the choice of my subject. In these days of progressive thought and inquiry, of experimentation and deduction, of changing theories of practice and new surgical and therapeutic methods, subjects of suitable nature are not far to seek. The difficulty of choice lies rather in culling out from among the number which thrust themselves forward some one subject which best befits our attention. Two things abide uppermost in my mind in this connection; first, that we are homœopathists, and, second, that we are specialists. I am impelled to choose for my subject, therefore, one which is distinctively our own; one which demands our best thought and wisest discussion; but one whose breadth and bearing is such that it concerns not alone our individual advancement as specialists, but that of our entire homœopathic school and the general progress of scientific medicine. Let us come then close to the root of the tree which bears our fruit and whose spreading foliage and goodly proportion is our delight and pride, but whose exuberance of growth demands judicious pruning. My subject is "The Re-proving of the Homœopathic Materia Medica from the Standpoint of a Specialist."

That such re-proving is desirable is a patent fact to the tyro in homœopathic practice. That it is an actual necessity is equally apparent to the man who strives for the greatest accuracy and the largest measure of success in his prescribing. The general practitioner and specialist alike feel in every day's experience the lack of precision, the verbiage and the minor inaccuracies of our present Materia Medica. No thought of condemning it enters the mind; to cast it aside is not to be considered for an instant; we owe to its guidance, with all its imperfections,

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American Homœopathic Ophthalmological, Otological and Laryngological Society is closed."

Dr. J. L. Moffat: "Before you adjourn the meeting, I would like to add my voice in praise of its success, especially when compared with fellow-societies. I think there were two main elements in the success of this society. The first is the energy, skill, tact, firmness and discretion of our presiding officer during the meeting, as well as his thorough work throughout the year; and the other is our rule giving a limited time for papers and discussions and the strict enforcement of that rule. I move a vote of thanks to our presiding officer."

The secretary put the motion, which was unanimously carried by a rising vote.

The president then thanked the members very heartily, and on motion of Dr. J. L. Moffat an adjournment was taken at 4:23 P. M.

HERBERT D. SCHENCK, M. D.,
Secretary.

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It is beyond the range of human possibility for any one man to properly observe and record and analyze and interpret all the symptoms which may arise throughout the organism in the course of a scientifically conducted proving. It is in like manner impossible for any body of men who are possessed of similar acquirements and the same technical training, to do this work as it ought to be done to meet the requirements of modern scientific methods. But given a body of men whose acquirements are dissimilar, whose training in the use of modern diagnostic instruments covers all the organs of the body, whose powers of observation are quickened and trained each in a different direction, whose ripened experience in diverse fields of pathology gives them a power to analyze the significance and trend of abnormal systemic and functional disturbances and, with such a force of observers, the methods of modern science can be applied and put to the test in the homœopathic proving of drugs.

To carefully observe and faithfully record is not enough for our present requirements. That was the method of the past and it was carried out by laymen, and by physicians who were noting their own personal symptoms. The results, as we have them in our present Materia Medica, are sometimes garrulous, sometimes scanty and insufficient, and very often misleading. It would have been of immense advantage to us could these symptoms have been passed upon by some persons other than the provers themselves, some physicians with specially trained powers of observation, who could apply physical tests, who could judiciously question and so determine the relation of associated symptoms, who could eliminate errors and the workings of the imagination, and who could, in some instances at least, not only state in scientific terms the facts and conditions noted, but out of their knowledge and experience could give them physiological and pathological interpretation which would bring them more directly into relation to the cure of disease. Who would think of prescribing for a patient who states his symptoms to us without first questioning him? Our knowledge of his condition is by no means derived from his statements alone. We chiefly judge from his answers to our questions, in regard to the disease for which we are to prescribe and the remedy which we are to select. The preliminary statements volunteered by the patient in regard to his symptoms serve us mainly as simple guides in determining the direction of our questioning. The symptoms most characteristic of the condition present, and those most valuable to the prescriber from a practical standpoint, are often not referred to at all by the patient. It

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is the universal custom to thus elicit knowledge of the disease by questions before attempting to prescribe and to the information thus derived we add all further information which we can obtain by means of physical examination. The more competent the examiner in learning, experience and technical skill, the truer will be the picture of the disease obtained. Suppose we were dependent for our knowledge of pathology upon the voluntary descriptions of patients, laymen, who had been sick with various diseases. How meagre it would all be and how little to be trusted as a store of working knowledge. And were the symptoms and governing conditions of disease described by physicians, who were themselves ill, we all know the liability that the results would be even less accurate, from a scientific standpoint, than in the case of the laity—so often is the physician's judgment and clearness of observation biased by his own sickness. We concede at once that these methods would fail utterly as a foundation for any adequate knowledge of pathology and yet have we not been depending upon precisely the same method for obtaining our knowledge of the homœopathic Materia Medica? Our long lists of recorded symptoms—the supposed effects of drug action upon the human organism—are either the voluntary statements of laymen in regard to their sensations and pains and mental states and various governing conditions, without any guide whatever to their observation and deduction, or else they are the records of personal experiences on the part of physicians who are sick to the extent of the drug's action and whose knowledge of physiology and pathology, when applied to their own symptoms, is liable to guide their observation and deduction erroneously. Does not the same principle which demands that the patient be questioned and physically examined before his pathological state can be truly determined also demand that a prover be judiciously questioned and properly examined by physical and functional tests before an accurate picture of drug-effects can be obtained? Let us gain our knowledge of the homœopathic Materia Medica in the same manner, with the same guides and guards and with the same precision that we employ in obtaining our knowledge of pathology. Then, and not till then, will one science become the fitting companion of the other.

A patient once came to me and, with nice distinction of language, complained of a noise within his ear, especially when moving the jaw, which sounded like "the bending of a piece of cloth which had been frozen." In the proving of *Eupatorium purpureum* I fiind recorded among the ear symptoms, "crackling like burning of birch-bark; very

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much increased upon swallowing anything." In the case of my patient simple inspection of the external canal and drum-head, with a suitable speculum and proper illumination, revealed the fact that this symptom was caused by a short length of hair, recently cut by a barber and blown within the meatus, which rested with one end upon a mass of wax on the side of the canal and rubbed against the surface of the drum-head with the other free end. Was the symptom in the *Eupatorium* prover caused by a similar means? Inspection would have settled that point at once and nothing else could except inspection. How about all the symptoms of rustling and fluttering and snapping, to say nothing of the crackling noises, which are recorded under eleven other remedies besides *Eupatorium?* Perhaps half of these were caused by foreign bodies, exfoliated epithelium or inspissated cerumen, within the canal. In that case which half! One thing and one only could have shown and that is local examination. Under ten different remedies we find a record of crackling noises in the ears either when swallowing, when moving the jaws, when reading aloud, when chewing, when eating or when blowing the nose, and also, under still another remedy, the symptom, "hardness of hearing relieved with a crack." Are these symptoms due to conditions of the Eustachian tube or to states of the external canal? How simple a matter to determine for one skilled in such interpretation and how helpful to our understanding of the remedial sphere of action of the drug in question. There are numerous records of pains within the ear, aching, tearing, rending, cutting, stitching and shooting. Were these pains neuralgic or inflammatory? Probably partly of one kind and partly of the other, but which kind belonged to which remedy? Inspection would have shown, but the ears were not inspected. Many sorts of tinnitus aurium are recorded. Which were due to throat conditions, which to circulatory disturbance and which to actual pressure in the external meatus? The interpretation of the associated symptoms present and one or two functional tests would have settled the point, which otherwise remains unsettled. Foul states of the ear are recorded, but what is there about the condition of the tissues involved? From the character of the pus and exudations mentioned we can only surmise the presence of caries, or granulation tissue, or polypi, when we ought to know for a surety and might know had an aurist properly cleansed and examined the parts. Instances may be indefinitely multiplied not only in the case of this one organ, but in that of all organs throughout the body which are capable of special examination and specialized study.

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It would seem, then, that, as a modern, scientific method of drug proving demands that the individual provers be subjected to judicious questioning in regard to the symptoms which they record, and to adequate tests to determine their physical and functional states; and as the majority of such examinations can best be made, and some of them can only be made by physicians of special training, the work of conducting drug provings in future should rest largely in the hands of organized bodies of specialists. On the other hand, it is obvious that the general supervision and direction of such provings should be vested in the hands of either a general practitioner of the largest possible experience, or in those of some specialist whose knowledge of the spirit and methods of specialists is supplemented by a large and broad previous experience in the general practice of medicine. This is absolutely essential in order that each proving should proceed from the broadest generalization to the closest study of particulars—the general systematic action of the drug never being lost sight of in its particular effects upon individual organs. Only one with wide personal experience in general medicine, and with a large and comprehensive grasp of materia medica in its generalities and broad characteristics, can properly assume the direction of a scientific drug proving; but the corps of trained specialists and of laboratory experts for blood, urinary and possibly bacteriological examinations and physiological tests, are also indispensable to the most complete results.

And now let us speak of one whose role in the scheme of drug proving which we are unfolding is of greater practical importance than that of either director or examining specialist, and that is the prover himself. It may be said that it will be impossible to find persons who are either willing or able to subject themselves to the annoyance and loss of time which such a method of proving exacts. It certainly demands, day by day, the sacrifice of a large portion of time to this one object, as long as the action of the drug taken manifests itself in the system and, possibly, even longer for occasional inspection. Any considerable number of such provers it will doubtless be an impossibility to find. The large classes of provers of former days will be no longer seen. But we must turn our thoughts from the idea of quantity to that of quality. It will be like abandoning the tillage of a large farm and devoting everything to the cultivation of a half-acre-field. There will be less of hay and fewer vegetables, other farms may raise those, but there may be produced in this way some very valuable botanical specimens and very choice seedlings which were never raised before. It is evident that to

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obtain provers in the future they must be sought out, and when found must be offered some substantial inducement to enlist their interest and to secure their full co-operation in the work which they undertake. In other words, it is my belief that with few exceptions the provers of the future must be paid. The exceptions will be the few men, here and there, who are possessed of sufficient leisure and are enthusiasts in medical science. To such men the world owes much already, and the debt will increase. It is not to be supposed that any man or woman will engage in the proving of drugs as a means of earning a livelihood. It is most unlikely that any sums which can be devoted to this purpose would sufficiently compensate anybody who is possessed of the requisite degree of health and intelligence to engage exclusively in such work, even for a short period of time. The hire of laborers might be afforded, but men of that grade are, of course, utterly out of the question because they are too ignorant and mentally untrained to observe correctly the very plainest drug-effects. Among those of higher intelligence who are temporarily out of employment by reason of some local infirmity, or some disqualification other than general ill health, some individuals might be found who would be available as provers and to whom even partial compensation would be most welcome. Most physicians have such persons among their patients. But, as a rule, among the chief qualifications of a successful prover, aside from health and intelligence, should be a knowledge and clear recognition of the nature, usefulness and definite purpose of drug proving. Minor inconveniences will then be cheerfully borne, that which is irksome will be met with patience and the realization of the importance of the work will dignify the meanest details. Such knowledge as this belongs almost exclusively to the medical profession, or to those who are in training for its ranks. Undergraduate students who are expecting to study medicine and the students in our medical colleges would then seem particularly available for provers—but this could only be during their long vacations and never while in active attendance upon lectures and while bound by the fixed hours of class work. This is because such engagements would make it an impossibility, in practicable hours, to wait upon the various examiners who might desire to analyze their symptoms and test their physical condition. On the other hand, during the long vacations most specialists are off duty a month or more, or visit their offices two or three times a week instead of daily. Moreover the summer season in itself is not conducive to work of great earnestness or accuracy. When in the course of evolution, however, the medical student has received his diploma and

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his license to practice, has opened his office in one of our cities, and is free, on the one hand, from the fixed engagements of the college and laboratory and, on the other hand, is, probably, equally free, for two or three years, from any great pressure of engagements with patients, then is the time when matters of science can receive full attention and when such work seems most attractive. When is our feeling of obligation to our profession so great as then! When do we set before ourselves a higher standard in our professional aspirations! And when, as we look back at our individual experiences, did the earning of a few dollars seem more desirable or necessary! It is my belief that our very provers in the future will be recent graduates of medicine, resident in our large cities, and closely in touch with our college and hospital laboratories.

This introduces another subject for consideration and that is the relation of the city physician and the country physician to this work of reproving our Materia Medica. Since the examination of provers and the verifying and recording of their symptoms must rest largely in the hands of an organized body of specialists, and these examiners must be able to avail themselves to the fullest extent of laboratory tests, it follows, of necessity, that the provings must be conducted in our cities or in close association with our medical colleges where alone such bodies of specialists and such laboratory facilities are to be found. But while the burden of the actual work of proving must rest upon city physicians there is no reason why country physicians should not bear their share of the expense which such proving entails. In fact this is about the only way in which the country physician can participate in this work, the benefits of which are shared in exactly equal degree with the city physician. There are few physicians in the country who are not both alumni of one of our medical colleges and members of one of our State societies. Unless funds can be raised for the specific purpose of drug proving by the contributions or bequests of wealthy individuals, either physicians or laymen, the most natural sources from which such appropriations could be derived would be the working funds of our medical colleges or the treasuries of our State societies. In the former case the concerted effort of the alumni could be most fittingly directed to the raising of the extra funds required, the results obtained from the expenditure of which would so closely touch the honour, the reputation and the usefulness of their alma mater, as well as so directly accrue to their individual benefit. In the latter case, should the expense of reproving be borne by our State societies, the increased demand upon the

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treasury could be provided for by temporarily augmented annual dues, the country physician, in this event, bearing his full share of the assessment.

It was proposed by the last president of the American Institute of Homœopathy that that body should undertake work of this character, and it was recommended that funds be appropriated from the treasury of that Society for this purpose. The plan proposed comprehended the use of paid provers, but applied only to a microscopical and chemical study of the effects of certain remedies upon the urinary secretions. The president proceeded to say, "By carrying on this work in the way suggested, each year taking up the provings with a view of studying specifically and scientifically some special organ of biological sphere, we may build up the materia medica." I think most specialists will regard this plan as involving a great waste of valuable material. It seems like the cutting down of trees for timber and sawing from each tree only one plank when the whole trunk is equally good and may be sawn into many planks. The provers being paid for the specific purpose of taking drugs and being thoroughly under the influence of the one chosen, so that their very secretions are changed in character, it seems in the highest degree deplorable that their other symptoms and changed functional conditions, aside from the urinary sphere, should not at the same time be studied by competent observers; and, above all, it seems like a golden opportunity lost if the sequence and correlation, or the distinct grouping of symptoms throughout the system, should not be studied and recorded. The disjunction of symptoms has been one of the most vital defects in the formation and study of our Materia Medica in the past and the re-proving of drugs solely with a view to their effect upon individual organs, or distant biological spheres, rather increases than corrects this defect. If, however, in order to avoid the waste of material and opportunity the working plan proposed to the American Institute of Homœopathy be amended and expanded, does it not at once assume a scope too complex to be wisely adopted by a national society? It is no longer possible for it to be carried out by a few representative men throughout the country. It involves a distinctive working organization of many men who live in the same locality. If, instead of a special organization, one or more already existing, like the faculties of our medical colleges, be chosen by the institute to receive its funds and execute its work it conveys an invidious distinction which is not desirable. Is it wise, then, for us, at this time, to make any special effort to enlist our national society in this work

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of re-proving, or to attempt to centralize the movement in any respect? Is it not better that we seek to make it as general and widespread as possible? Is it not better to look for the necessary funds to private sources, or to the faculties of our medical colleges who may disburse sums specially raised and intrusted to them for this purpose, or to the treasuries of our State societies, replenished by the assessment of special dues? It need hardly be said that the items of expense would be the payment of some adequate compensation to the men and women who act as provers, and possibly to the laboratory assistants, together with the expense of laboratory material and, probably, nothing more. It is scarcely to be doubted that the physicians and specialists who examine the provers and conduct the provings will give their time and services without thought of other compensation than that which comes from the satisfaction of advancing so worthy a branch of medical science.

And now a word as to the preliminary examination of one who is about to undertake a proving. I know it to be the belief of some who are wisest in these matters that the effects of a drug should be allowed to develop in the system in precisely the same manner as that in which symptoms develop after exposure to morbific germs and their inception within the system. Until the appearance of the actual symptoms of disease the mind is in no wise occupied by the condition of any bodily organ, and this makes the character of the symptoms when they do appear the more marked and their sequence the more significant. So, it is argued, should it be with the mind of the prover. Let him not only be in ignorance of the time when the drug is actually taken, but in no way call his attention to any of his bodily functions. Time enough to analyze drug-effects when they actually occur and determine then by examination the condition of the organs affected, just as we would do if a patient came to us with some definite disease. That the prover should not know when he is taking a drug and when a blank I believe all will agree is most reasonable, and is, indeed, an absolute necessity for scientific accuracy. But that there should be no preliminary organic examinations or functional tests of the prover before either drug or blank is administered I believe most specialists will object to strenuously. Such a plan would be ideal for the determining of gross effects, but in the case of most of our older remedies that has been already done. In the work of re-proving we want to accomplish far more than that. We want to obtain a knowledge, particularly in the case of special organs, of the most delicate functional disturbances,

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even to the disarrangement of reflexes, and how can this be accomplished without preliminary examination and careful record both of organic states and functional conditions before the proving begins? For instance, the sphere of action of a drug upon the organ of hearing may be difficult to determine. It may be applicable to conditions of the auditory nerve and its terminals, that is to disturbances of the sound-perceiving apparatus, or it may apply rather to catarrhal states involving the middle ear, or the sound-conducting apparatus. Anything which will throw light upon this matter will be of service. The way in which the limit of perception is affected for sounds of high and low pitch would be of direct practical importance in this respect. Is the upper limit raised or lowered? And is there a corresponding change in the lower limit? Who could tell unless both limits of sound perception were previously recorded? And what is there about the preliminary tests with the tuning forks, or Koenig's rods, or Galton's whistle, which would in any way disturb the equilibrium of that prover's mind or predispose him to any exaggerated drug-effect in the direction of sound perception? So in regard to other tests of hearing, and examinations of the condition of the external canal, and the plane of the drum-head, and questions in regard to tinnitus or autophony. So also in the examination of other organs. Does the examination of a patient's chest with reference to life insurance fill his mind with imaginary pulmonary symptoms or make him more liable to feel pains in his chest than in his legs? And if all the organs of the body are alike examined how much less likelihood of the mind of the prover dwelling upon the condition of any one organ more than of another! The probability is that if a modern laboratory method is applied to our homœopathic drug proving our most valuable indications for the employment of drugs in diseases will come from functional rather than from organic disturbances, and if this is so what specialist would not enter his plea for the functional test in drug proving? This, of necessity, calls for the preliminary organic examination and functional testing of the drug prover.

To summarize, in closing, I should say, therefore, that, from the standpoint of a specialist, the re-proving of the Homœopathic Materia Medica requires that such work be done either in our large cities or in close connection with our medical colleges; that it be conducted by organized clubs or boards of physicians which shall be presided over by a master or director of provings; that this director shall himself be a general practitioner of the largest possible experience and the broadest knowledge and grasp of materia medica, or that he be a specialist

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who has previously had such general experience in medicine; that he shall have associated with him two or three other general practitioners for the division of labor and a body of specialists for the examination of special conditions and testing of special organs, and that these shall cover the mind and nervous system, the eye, the ear, the nose and throat, the chest, the genito-urinary system and the skin; that arrangements shall be made for the assistance at all times of laboratory experts for chemical, microscopical, bacteriological and physiological tests; that the provers shall receive some adequate compensation for their time and services, the means to come from private sources, from funds administered by our medical colleges, or from the treasuries of our State societies; that the provers shall be subjected to careful preliminary organic and functional tests; that they shall receive the drug to be proven at the hands of the director of the proving so guarded by blanks and counter-tests that they shall not know the nature of the drug taken or when the actual administration begins; that the examiners themselves shall not know what drug is being proven or when it is being administered, but may receive special hints or practical suggestions from the director at his discretion; that the prover shall keep a daily record of his own condition and symptoms in a book provided for this purpose and shall submit this written record every day to the director of the proving; that after careful questioning the director shall each day send the prover to such specialists as may seem desirable for the further testing and verification of special symptoms or conditions which may arise, the visit to be made during the specialist's office hours or at such other convenient seasons as may be specified in advance or arranged at the time by telephone; and that, finally, the results of the proving as a whole shall be summarized and arranged for publication in scientific form by the director with such aid from any or all of his associates as he may desire.

We have convinced ourselves of the truth of our guiding therapeutical principle by the ability which we possess to cure the sick by the administration of drugs chosen in accordance with even the imperfect indications of our present materia medica. We have convinced our patients of the truth of this principle by the beneficial results which they have observed in their own families and by their own individual experiences when sick. We have failed, however, to convince our fellow-practitioners of different therapeutic faith, or of no therapeutic belief, that we possess any therapeutical principle which is worthy the name, or that our materia medica is more than a conglomeration of

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fortuitous symptoms through which no adequate guiding lines are discernible. Hitherto we have spoken to these colleagues of the older school chiefly with the voice of assertion. Let us now speak to them, with the clear, dispassionate voice of science. Let us say to them, "these are the effects of drugs upon the healthy human organism, observed and recorded in accordance with modern laboratory methods and tested by modern instruments of precision. Note the relation of these drug effects to the curative action of these same drugs when administered to the sick in attenuated form. Give heed to this parallelism, in the spirit of science, and tell us—is this a vagary of the imagination or is it a central truth of a modern science of therapeutics and worthy of full recognition and acceptance throughout the whole medical world?"

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PERIOSTITIS OF THE ORBIT.

By B. I. Barbee, M. D.,

Columbus, Ohio.

WE meet with two forms of periostitis, the acute and chronic. The former or acute form, the only one with which I have had any exeprience, will be considered in this paper. The disease is not met with very often, or at least that has been my experience; and in looking up statistics, I find that Berry says, "Out of 250,000 patients reported, one in 800 was the subject of some orbital affection;" if this is true, we can safely say there is not more than one case of periostitis in 2,000 eye cases treated by the oculist.

The inflammation is usually limited to the surface of the bones, to the periosteum and superficial bone layers. It is not always possible in the beginning of the disease to make a diagnosis of an inflammation of some part of the orbital wall, and one which originates in the connective tissue of the orbit. The inflammation may extend to the cellular tissue, but orbital cellulitis does not usually lead to periostitis of the orbit. In this disease the inflammatory symptoms are very severe and pronounced, the patient complains of great pain in and around the eye, the least outward pressure increasing the pain. By making light pressure along the edge of the orbit, the point where the pressure causes the most pain, and where the swelling is the greatest, will indicate about the location of the disease. The eyelids are swollen, the upper generally more than the lower; they are painful, red, and hot. The conjunctiva is congested, pupil contracted; the eyeball becomes somewhat protruded, which is not always straight forward, but generally to one side; which is due, perhaps, to the fact that the periostitis is confined to one part of the orbit; thus, if the upper and outer wall of the orbit is affected, it would protrude downward and inward, causing diplopia. The cellular tissue generally becomes involved to a certain extent, and if the inflammation is extensive, pus may form; the eye becoming greatly protruded and its movement impaired. Partial or complete paralysis of the ocular muscles may take place from pressure on the muscles, or nerves supplying them. Optic neuritis may be present, followed by atrophy of the nerve, seriously impairing the vision of the affected eye.

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During the acute stage of the disease, the patient usually has fever, increased temperature, and more or less marked vomiting. The cause of periostitis of the orbit is, I think, a difficult matter to determine. Norris and Oliver say, "Orbital periostitis may be one of the first signs of constitutional infection, occurring sometimes shortly after the appearance of the initial lesion. It is confined almost exclusively to the periosteum, and whatever inflammatory condition of the bone may be present is merely secondary to the periostitis. In the adult these periosteal swellings tend to spontaneous resolution, and they often rapidly disappear without leaving any trace. In the hereditary syphilis of children, however, this form of periostitis very soon takes on suppurative action, and ends in death of the bone. In acquired syphilis, this early form of orbital periostitis is circumscribed, varies in duration between four and six weeks when left to itself, and disappears much sooner under appropriate treatment." Draughts, colds, injuries, and decayed teeth are also given as causes.

As to the treatment of these cases, I have very little to offer. If the patient has had syphilis, *Kali iod.*, *Merc.* and *Aurum* should be thought of. From other causes, I can only give you my experience in one case which came to me for treatment. The following case is interesting on account of its severity and complete recovery:

Case.—The case was referred to me by Dr. C. A. Shultz, who had been called about 6 A. M., April 26, '98, to see a patient of his. After giving remedies and applying cocaine to the eye without any amelioration of the pain, he came to the conclusion it was a case for an oculist, and requested me to take charge of the case.

I saw the patient about 9 A. M. of the same day, (April 26): A man fifty years of age; occupation, railroad engineer; weight, about one hundred and seventy-five pounds; light hair and complexion; strong; looking almost the picture of health, barring the drawn features caused from the excessive pain; as he expressed it, the pain in the eyeball and around the eye was almost too great to endure. The right eye, (the one affected), seemed to be slightly protruding; the ocular conjunctiva congested, and some chemosis. The pupil was not dilated from the effects of the cocaine used by Dr. Schultz a few hours before. Upper lid swollen more than lower; very severe pain in the eyeball and around the eye, extending over part of face; some fever, temprature 98½. Vision in eye about normal, as far as I could judge. Vomiting every time he took medicine (*Gelsem.*), but no other time; and seemed to think the medicine caused the vomiting; tenderness around orbit, more at the upper outer side; had never had syphilis; gonorrhœa once, years ago. Temperate in every respect. Some pain on right side of head for the

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past week, supposed it was neuralgia, and took no medicine for it. I put a 2 per cent. solution of atropine sulphate in eye, continued *Gelsem.*, not taking stock in the medicine causing vomiting, and called to see the case again at noon. Patient no better, if anything, worse; continues to vomit after taking medicine. Pupil slightly dilated; examined fundus of the eye with opthalmoscope, found some inflammation of optic nerve and retina, veins engorged, but nothing to produce the severe pain. I promised to give him something to relieve the pain if it was not better by night, gave *Merc. viv.*, took my departure, and returned at 7 P. M.; found patient no better, if anything, worse, but no vomiting. Gave hypodermic injection of morphine, other treatment same. 'I will add that hot applications were used all the time during the severe pain.)

April 27th, 8 A. M.—Patient had rested fairly well, pain not so great, temperature 98½; examined eye with ophthalmoscope, found more inflammation of fundus, slight protrusion, vision not so good; no vomiting, other symptoms about the same; no morphine, other treatment same.

6 P. M.—Pain worse, otherwise about the same with double vision; objects close together. 9 P. M.—Pain worse, more fever, temperature 99; morphine injected, *Magnes. phos.* instead of *Merc.*, other treatment same.

28—8 P. M.—Rested about same as previous morning; temperature 98½; no morphine, other treatment same. 6 P. M.—Pain not so severe; general appearance of case better; fundus of eye improved; vision no worse; some appetite; no morphine; other treatment same. 29th—Feeling much better; continued treatment; no morphine. 30th, 6 P. M.—General condition much improved, very little pain; resting well; some appetite.

May 2d—Patient sent to office for medicine; appetite fair, steadily improving. May 4th—Came to office for treatment; examined eyes, and found vision as follows: O. D. v. 20-50, O. S. 20-20, weakness of external rectus muscle.

Prisms 10° to correct double vision. I advised him not to use the eyes any more than possible, and only for distance; gave *Kali phos.* for a week. May 11th—Tested eyes again; O. D. v.=20-20—1. D,=20-20, O. S. v.=20-20—1. D.=20-20 with 6° prism; gave R.—1. D. O. U. for distance.

The case was given *Kali phos.* for a week, then *Strych. sulph.* until June 9th; eyes examined again, no diplopia; the patient seemed to be in his usual health, and was discharged as cured.

I have seen the case occasionally since, and he informs me there has been no further attacks.

No doubt there are many members of the Society that have had a great deal of experience in treating this disease; and the object in choos-

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ing this subject for my paper is, to have a thorough discussion, and to hear the experience of others in treating periostitis of the orbit.

DISCUSSION.

Dr. Bushrod W. James: I am a little surprised that the author does not give a more specific division of the subject. A simple, acute or chronic form of periosteal inflammation is certainly a very limited division. I think if he had taken fully into account the orbital bony structure in its various inflammatory diseases, which are found by ophthalmic surgeons in this class of cases, he would have covered the ground more thoroughly. For instance, an ordinary periostitis, or inflammation of the covering of the bony structure itself as a simple, acute or inflammatory disease, would be one division. Then I would think of the deeper lesion where the bone-structure would be enveloped as well as the periosteum, giving us an osteo-periostitis, which means that both the bone and its covering are involved. This form usually is located in the outer surface of the bone and invades the membrane contiguous thereto. Then there is a class of cases in which the deeper structure of the bone itself is affected, and where the suppurative process goes on and the periosteum itself becomes ultimately acutely inflamed and acts as a secondary condition to the bony disease of the structure itself. Then again, we may have the entire bony structure falling into a state of necrosis, from, possibly, some remedy such as Hydrargyrum, in one of its various preparations. In this case the destruction of the bone itself would give rise to a sub-acute involvement of its covering membrane and we would get another form of periostitis, due to a very serious structural disease as the primary cause. We must not forget, too, that there is often exostosis, or hyperostosis, of the same portions of the orbital osseous structure. Here again by pressure of this bony material underneath the periosteum and the distension of this delicate membrane, possibly from the deposit from its under surface, causes a diseased state of the periosteum which from the accumulation of bony matter and the consequent extension of it in area, and pressure upon the periosteum, forms bony accumulations beneath the membrane and these engender an inflammation which may in its early stage cause an acute inflammation, but as the disease remains or increases in extent it becomes a chronic disease, and in this way we have the acute form running into the chronic form of periostitis, which the author does not consider, but which I think is quite as important as the acute form, and certainly much more difficult to cure by internal medication or surgical operation.

Then, again, I have to say one very important form of periostitis has been but slightly considered by the author and only in case of children, whereas it is quite as common in adult life, and that is, the syphilitic form of the disease, which we all know is most destructive in its progress and gives rise to a most painful form of a periosteal inflammation.

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Next I would consider which of these different forms of inflammation would require a special consideration or special line of treatment.

These periosteal inflammations usually involve the round cells which are found below the membrane, besides which, the periosteum itself, in this inflammation, involves the cells of its own structure and the fibrous tissues or bundles of which it is composed, and as there is more or less tumefaction connected with this periosteal inflammation, we account for that condition by the œdema which accompanies the inflammatory process and throws out this adhesive material which is noticed from an outside view even, in the swelling of the parts.

All these forms of periostitis are liable to throw out products which give rise to the exostoses, osteophytes, eburnation, enostoses, and these bony accumulations of themselves become extremely troublesome in the management of orbital periostitis. The bony gummata that are met with in some cases of syphilitic periostitis usually destroy a considerable amount of the osseous structure of the part involved, either in the orbit or the other cranial bones. Fortunately they are not so liable to occur about the orbit as in other cranial bones. These external gummata press the periosteum up from the bone and detach it therefrom. This is the first effect, but subsequently, by pressure upon the bone, the latter becomes oftentimes so very much diseased and changed that depressions in the bony structure itself occur which may either fill up and present a bony structure or be a fibrous form of deposit. The principal symptoms in these cases are the intense pains, known as "bone pains," which are the most intense and troublesome to the patient at night, giving rise to the most annoying neuralgic suffering.

I was somewhat struck in the reading of the paper with the omission of the special diagnostic indications or symptoms in the disease, such as the intense neuralgic pains which exist all along the orbital region and into the orbit itself. A symptom which he mentions in individual cases he relates has been well referred to as a diagnostic sign. The redness of tumefaction of the lids of the conjunctiva, the chemosis that is very frequently present and nearly always occurs if the cellular tissue has become affected. Then the exophthalmos, which may or may not result, according to the location of the periosteal inflammation of the orbit. If may be one-sided or directly forward, according to the location of the pressure upon the globe. I see but little mention of the frequent accompaniments which the pressure of the sub-periosteal osseous deposit is likely to cause in the form of neuritis or pressure upon the important blood-vessels near the foramen as affecting the acuity of vision by the consequent pressure upon the optic nerve at this point. Of course, this is a most serious outcome of extensive periostitis in its progressive form, as atrophy of the optic nerve of that side is almost certain to result. The importance of frequent ophthalmoscopic examinations in these cases I see is not urged. While the pains may be dispelled frequently during the day, still we may have the pain, or chill, or fever and aggravation of all the symptoms at night and especially of acute periostitis.

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The caries which often result in periosteal inflammation of the orbit is not thoroughly dwelt upon and its importance specially spoken of. This result is probably one of the worst forms of the sequellæ of the disease. As to treatment, the case which he relates was unsatisfactory because it was palliative and not curative as it should have been, but in case of supporation there must be a liberation of the pus, and in case of acute pain, possibly local, dry heat or fomentations might give temporary relief while the remedy suited to the totality of the symptoms is administered internally. If other complications arise, such as rheumatism, the symptoms, of course, should be searched out and prescribed for, in accordance with the homœopathic law, and palliation by narcosis should be entirely avoided as the pains are the indices of the disease action and to smother these out of the way is, to my mind, not a very homœopathic mode of treating periosteal inflammation. I would not be so positive about non-aggravation if I was given *Gelsemium* so strong as he administered it. I think he was treating drug-symptoms much of the time and then all indications for a homœopathic selection was smothered by atropia and further by the morphia. These should have been avoided and the simillimum from the total symptoms present should have been his guiding aim.

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A CASE OF SYMPATHETIC OPHTHALMIA DUE TO THE STUMP LEFT AFTER EVISCERATION THREE YEARS PREVIOUS.

By J. H. Harvey, M. D.,

Toledo, Ohio.

History.—Mr. J. P. came into my office in January with a letter from Dr. Irvin, of Mansfield, O., an eye and ear specialist, saying that bearer has glaucoma and requires an iridectomy at once, but that he could not operate him as he would start for the Pacific coast that day.

Age of patient forty-five years. General health good. No history of specific trouble. Occupation horse trainer.

Ten years ago while cracking a whip something struck him in the right eye, producing severe pain and resulting in ulceration, with perforation of the cornea. He had no medical care other than that of a traveling eye specialist at two different times without benefit. After a year it ceased to pain and discharge.

After several years he had occasion to make a long visit to the Ohio Penitentiary, and while there the attending oculist suggested removal of the eye. On writing Dr. Brown for facts concerning the case, he answered that the operation was done to enable him to wear an artificial eye, the diseased eye being very unsightly from old corneal trouble. He was very sure there had been no penetrating wound of the eye and selected evisceration to get a movable stump. Patient made an uneventful recovery.

Patient made several attempts to get an artificial eye that he could wear with comfort, but finally abandoned wearing any. About a year and a half after operation he experienced occasional attacks of pain in the stump, accompanied after several attacks by irritation in the good eye, but without much or any redness. Soon he noticed the vision beginning to fail with no improvement from glasses. In January, when he came to me, he depended largely upon a cane; reading 5-200. Pupil was partially dilated. Tension slightly higher than my own. Anterior chamber normal. Slight reaction of pupil to bright light. Vitreous hazy. Could not get a view of the fundus. Some tenderness in ciliary region on pressure, and for two months some pain in eye when stump pained.

After watching him for two weeks and being unable to get symptoms that called for iridectomy, I suggested enucleation of the stump. With the patient's consent I removed it. Hæmorrhage was severe, as it was embedded in a mass of blood-vessels. In attempting to cut through the stump, found it almost as hard as bone. In ten days the foggy vision

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had improved some and in three weeks vision was 15-200. Two months after the operation he could read 20-50. I have not seen him since, but he wrote that he could see as far and as good as he ever did with one eye. There has been no return of the pain and irritation in the eye or orbit.

DISCUSSION.

Dr. W. B. Kreider—Sympathetic ophthalmia has received much attention at the hands of ophthalmic surgeons. Its causes, its progress of invasion and the responsibility of the surgeon who has a case under observation, all tend to keep us on the alert, exercising care and caution to be able to know and to do, when to remove an eyeball and when to save one.

The case under discussion elicits the query, Is it ever wise to do evisceration? It is my endeavor to take a tenable side of a question and answer with a few clinical cases by way of comparison. The case of Dr. Harvey's had a continued history, first traumatism of the cornea followed by ulceration and final loss of vision of the injured eye. This condition came about by a process of inflammation. There was a time when this eye was surcharged with blood. On the subsidence of the inflammation there was a continual anastomoses of blood-vessels running to the orbit. This eye had also undergone irido-choroiditis and resulted in sclerosis, a stony hardness as Dr. Harvey states. In reviewing the causes of sympathetic ophthalmia we find an old authority in Soelberg Wells, the following stanza: Sympathetic ophthalmia may also be caused by internal inflammation of the eye, more especially if they are accompanied by hæmorrhagic effusions either considerable in quantity or of frequent occurrence, together with rapid fluctuation in the intraocular tension.

Also if a bony deposit in the choroid has occurred and the eye remains irritable to the touch. Indeed the continuance of sensibility in the region of the ciliary body in cases of irido choroiditis or in eyes which have undergone atrophy after internal inflammation is one of the most dangerous symptoms, as such eyes are extremely prone to set up sympathetic ophthalmia. The clinical features of this case compared with the authority stated show a resemblance. The stony hardness, the atrophy after inflammation, the sensitiveness are positive conditions that such an eye should never be eviscerated. In my opinion there was a time when this eyeball could have been eviscerated with safety to its fellow; that time was before any atrophic changes had taken place and while the eye was yet in an acutely inflamed condition. I will present two cases of eviscreation done in different conditions:

Case One.—Mrs. W., aged sixty, was referred to me by her attending physician after the eyeball had spontaneously ruptured after an attack of fulminating glaucoma. This eye was in the intensity of its inflammation when evisceration was done. No sutures were used after the evisceration as the tissues were too œdematous. The recovery was

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uneventful. The stump now past eight years old gives perfect satisfaction, never having caused any irritation.

Case Two.—Master H., aged ten years, in the act of cutting kindling wood, was forcibly struck in the left eye by a piece of wood. The cornea was ruptured, the cut extending into the sclera, the crystalline lens dislocated with some escape of vitreous. I saw the case twenty-four hours after the accident. Complete evisceration was done under chloroform. Sutures were used to bring the peripheral edges together; healing was prompt. An artificial eye has been worn for ten years with comfort.

My distinction to eviscerate or not is this, I would not eviscerate a stump however nice its contour. I would not eviscerate where a foreign body had entered the eyeball and could not be located. I would eviscerate immediately after an injury where the eye was destroyed and no foreign body had lodged within the globe. I would eviscerate in some forms of acute inflammation, as in case one. In short, my operations for evisceration would be confined to acute cases and chronic stumps to enucleation.

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NASAL STENOSIS.

By J. Ivimey Dowling, M. D., O. et A. Chir.,
Albany, N. Y.

A GOODLY proportion of the cases that come under the care of the nasal specialist complain of symptoms that are the direct outcome of partial or total nasal stenosis, and it is therefore interesting to acquaint oneself with the varieties of this condition. The symptoms vary according to the location of the stenosis and its amount, whether partial or complete. Thus the sense of smell may be impaired if the stenosis is high, or the ability to perform nasal breathing be damaged if the obstruction is low.

The varieties of obstruction may be divided into acute and chronic, the former being due to transitory enlargement of the turbinateds, thus blocking the nasal passages and interfering with normal respiration, the latter arising from hypertrophic rhinitis, polypi, adenoids, deflected septa, septal spurs or synechiæ.

The purpose of this article is merely to call attention to two forms namely:—The acute variety arising from acute rhinitis with its accompanying turbinated engorgement, and one variety of the chronic condition due to partial synechia complicated with a nasal spur.

Acute rhinitis with turbinated enlargement sometimes leaves a subacute condition in which the turbinated bodies remained engorged, producing distressing symptoms, owing to the inability to breathe normally. These cases will generally respond to local stimulating treatment and internal medication without the use of the cautery.

Case One.—A case illustrative of this condition is as follows:—Mr. T. complained of persistent insomnia, of a number of days' duration, and incidentally of inability to breathe freely, rush of blood to the head, and a general nervous condition with profuse sweats. Examination of the nares revealed greatly engorged turbinated bodies of a dark red hue with but slight mucous discharge. The tongue was coated, and the patient believed the insomnia to be due to the gastric disturbance, but attention to the nasal condition proved the contrary. The local use of cocaine depleted the turbinated engorgement and a spray of menthol, eucalyptus and camphor further relieved the condition so that he slept well, the sweats became less frequent and finally ceased; the insomnia and rush of blood to the head also disap-

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peared. The remedy that was prescribed was *Nux vom.* 1x, a tablet every hour. Treatment was continued for three days. Since being discharged he has been free of the annoying symptoms which were due to the subacute condition following several previous attacks of acute rhinitis.

Case Two is a young lady who came for treatment because of lack of resonance to the voice and inability to breathe freely. Examination of the nares showed the inferior turbinated of the right side to be in contact with the septum. This was easily remedied with the aid of the cautery. The left nares was occluded by a septal spur, and after its removal there was found to be an almost total occlusion, the inferior meatus being much smaller than normal, due to a hyperplasia of the inferior turbinated, and the middle meatus was blocked with a synechia, and the septum was dotted with small ulcerations, from which there would occasionally ensue profuse hæmorrhages. The ulcers were healed by the daily application of Ichthyol ointment 10 per cent., and the inferior meatus enlarged by gradual dilatation carried out by means of soft rubber catheters until the required size was obtained. The catheters were passed daily, using a larger one each time until a No. 14 could be passed freely, then this was passed for several days until the meatus was permanently opened. The synechia was removed with the nasal forceps and after having obtained a good free passage one of the large size Simpson's intra-nasal tampons was inserted, and allowed to remain in place for twenty-four hours; then the cavity was thoroughly cleansed and a thick piece of dental rubber inserted, it being removed daily and replaced for a period of two weeks.

A word of caution is advisable in reference to the use of Simpson's tampons, and it is that they should seldom be used as prepared, for they are made up of a large number of layers and the oozing of blood and serum following an operation causes so much swelling of the tampon that the patient will be caused considerable pain radiating from the nose and extending through the face and forehead and to the teeth.

The small granulations left after the use of the tampons and dental rubber were cauterized with Chromic acid. The treatment resulted in obtaining a good breathing space, although there still exists a small synechia between the middle turbinated and septum; but the patient having gained ten pounds within three months and the nasal quality of the voice having disappeared, it was deemed advisable to discontinue treatment.

These outlines of cases are given with the idea of calling attention to the use of Simpson's nasal tampons after intra-nasal operations, and also to the beneficial effects of gradual dilatation in hyperplasia of the inferior turbinated bodies.

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DISCUSSION.

Dr. C. E. Teets.—So much has been written upon this subject little that is new remains to be said. The Doctor has called particular attention to Simpson's nasal tampons, that may be used after intra-nasal operations. I have never noticed any special advantage in using the Simpson's or McBurney's tampons, and frequently they cause a great deal of pain and inconvenience to the patient. Nothing gives such satisfactory results after an operation as the cork splint, if properly shaped and coated with Iodoform and Collodion, or Traumatol and Collodion. They arrest hæmorrhage, cause no inconvenience to the patient, and are easily removed.

The Doctor mentions a case in which he enlarged the inferior meatus by gradual dilatation with soft rubber catheters. I have not found this method of enlarging the nasal openings very successful, and can see no particular advantage over other methods which will produce much better results in less time.

In the removal of a synechia from the nasal passage, we must remove enough tissue from the septum and turbinated so that when the parts are healed it will be impossible for a return of the trouble. During the healing process two or more pieces of dental rubber should be properly placed so as to keep the parts separated, and prevent re-adhesion. I find the dental rubber very useful, not only for the purpose just mentioned, but also to keep the septum, after straightening, in its new position.

The local application for erectile hypertrophy, just mentioned in the paper read on "Nasal Stenosis," I have used a number of times with excellent results. Pinus Pumilio is another remedy when locally applied causes a rapid reduction in the swelling; in these cases the indicated remedy should not be overlooked, and can be given in connection with the local application. I have never had any reason to believe that local applications interfered with the action of the homœopathic remedy, and I am satisfied that the results following are more satisfactory when both are used.

It has become a settled fact that the respiratory function of the nose is the most important, and when the nasal passages are obstructed so that the normal respiration is interfered with, it causes not only discomfort, but often great harm. Obstruction in the nose affects, not only the ears, eyes, voice and throat, but frequently affects the general health of the patient, as in the case the Doctor reports, in which the patient's weight increased ten pounds after the operation. I could mention a number of cases where not only the voice and hearing were improved, after the removal of the obstruction, but also the general health of the patient showed marked improvement. We sometimes fail to get good results because the operation is delayed too long.

It is the duty of every physician to examine carefully the nasal passages of children placed under his care, and if an abnormal condition exists, whether it be a complete or partial obstruction or only a contact of tissue, it should be corrected. In this way you will be able to save your patient from a great deal of suffering later in life.

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MULES' OPERATION; MODIFIED; ITS LIMITATIONS AND VALUE.

BY ELMER JEFFERSON BISSELL M. D.,

Rochester, N. Y.

THE department of cosmesis within a few years has come to assume a prominent place in the domain of surgery. While a patient's life and health are of first importance and must ever remain the chief aim of the surgeon, yet it is a well recognized ethical principle that it is also his duty to perform his work with neatness; with as little disfigurement as possible; and ofttimes to work for the sole purpose of beautifying his patient.

He must strive to avoid results which are unsightly and mortifying; he must use his skill to transform that which is repulsive into something even attractive if possible. He must come to his labor with the spirit and skill of an artist. If the surgeon fails to appreciate the laudable desire of people to appear beautiful; if he ignores the aesthetic element in his work, he may well be criticised; indeed he should be, even though he prolongs his patient's life or improves his health.

The removal of an eye is a great disfigurement and subjects the unfortunate person to untold embarrassment. Any operation, therefore, which at times can be safely substituted for enucleation is worthy of careful study and should be given a fair trial.

Mules' operation, or the operation of excising the cornea and placing within the scleral cavity a glass sphere as a substitute in certain cases for enucleation or evisceration as generally practiced, like many another operation, has been first unduly praised, then condemned and almost abandoned, and is now in that third and rational stage where with improved technique and clearly defined limitations of application, it must rank as a valuable acquisition and positive advance in ophthalmic surgery. It is so unique in character that it should attract the attention and investigation of all ophthalmic surgeons; and its importance renders its further consideration both interesting and practical. Especially is this true since no text-books give anything like a complete and comprehensive description of it. Almost without exception the text-books tell you to "excise the cornea as in ordinary eviscera-

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tion," and then they may add, "to take out a triangular piece of sclera from the superior and inferior portions of the wound." If you follow these directions you will surely have an opening in the sclera with wavy, irregular edges which, when sutured, will be imperfectly coaptated. To this defect I ascribe, largely, the failures (i. e., imperfect scleral union and ultimate expulsion of the glass sphere) which have been recorded against Mules' operation.

Because of the dense, unyielding character of the sclera, so unlike the soft, flexible tissues ordinarily sutured, the edges of the sclera must be perfectly regular and the opening properly shaped, or the wound cannot be closed over a sphere without puckering or gaping. The importance of this is emphasized when we remember the limited blood-supply of the sclera and that very little fibrinous, gluey exudation is thrown out into the wound to fill the irregularities and favor rapid healing.

This may appear clearer as I describe a method which I have used in ten cases without a failure; most of them over two years standing, some over three years and none less than six months.

The patient is prepared the day before the operation with all the care essential for a cataract operation, and even more thorough measures adopted to try to render the conjunctival sac sterile than are permissible previous to cataract work. After a general anaesthetic is given and the sterile gauze removed from the eye, the conjunctival sac is again freely flushed with bichloride solution (1 to 5,000) and at the same time gently rubbed with cotton. A speculum is now introduced and an opening made in the conjunctiva as near the cornea as possible; into this opening the larger and blunt blade of a pair of small scissors is introduced; the conjunctiva is incised entirely around the cornea and dissected back for at least one centimeter. With a Graefe cataract knife a puncture and counter puncture (b and d) are made at points representing the extreme width of tissue, which should also be the very least that is necessary to be removed, and the cut is made directly out in the horizontal plane of the eye-ball.

Under the superior flap of cornea thus formed the same knife is passed and a puncture made at a point (a) about six or seven millimeters above the cornea; this point to be the superior angle of the wound and the flap divided into halves (o to a). The inferior flap formed by the first horizontal incision is treated in like manner. The aim is to make the length of the wound one-third to one-half greater than the width. With medium-sized, curved scissors each triangular

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flap is removed with one cut of the scissors; (a to b; b to c; c to d; d to a). This will give an evenly curved wound shaped like a section of orange peel, and one that can perfectly be coaptated by sutures. With a good-sized curette everything is removed from the scleral cavity; not a shred of anything should remain. With bichloride freely flush the cavity and then introduce into it a carefully selected glass sphere (Fig. 2), using the little instrument shown in (Fig. 3). The sphere must be absolutely sterile and of a size to admit of easy closure of the wound at its widest part, which will be the points where the puncture and counter-puncture are made. Before suturing draw the edges of the wound together with forceps to determine whether the sphere is too large or too small. If it is satisfactory, close the wound with four or five interrupted white silk sutures. This suturing is one of the most important steps of the operation as it must remain permanent. Avoid bruising the tissues with forceps and use only fine, sharp-pointed, curved needles. Each needle should be as carefully tested as a cataract knife, and then threaded with only one or two strands drawn from twisted white silk. See that the sclera is brought edge to edge with no overlaping, no gaping, no puckering, and no undue tension. The conjunctiva is now closed horizontally with interrupted black silk sutures, which are to be removed in six or seven days. Both eyes are lightly bandaged and an ice-bag applied immediately over the operated one. The continual use of ice for three to five days greatly lessens the oedema and pain. In fact, both are quite insignificant when ice is properly applied. The patient is able to leave the hospital on the seventh or eighth day, but is not allowed to wear an artificial eye until two months after the operation.

To recapitulate, there are five essentials which cannot be too strongly emphasized for the successful performance of this operation:

1st.—Perfect asepsis.

2d.—Smoothly curved scleral edges, neatly sutured over a well-fitting glass sphere.

3d.—Complete removal of everything from the scleral cavity before introducing the glass sphere.

4th.—Continual application of ice to the eye for three to five days.

5th.—No wearing of an artificial eye until at least two months after the operation.

Frequently it is as difficult to properly select the cases for which a certain operation is appropriate as to skillfully perform the surgical work. This is true of Mules' operation and a surgeon's success with

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it will greatly depend upon his ability to accurately differentiate his cases. My experience has led me to the following conclusions:

1.—The operation should be performed in cases of unsightly eyes where an artificial eye would be less disfiguring or repulsive; as in excessive anterior staphyloma.

2.—In many cases of foreign bodies within the eye and when enucleation would be performed as a matter of safety to the other eye. Especially so if the foreign body has entered the eye through the tissues excised in the performance of this operation.

3.—In carefully selected cases of penetrating wounds of the eye where for well-known reasons enucleation would be considered.

4.—For aesthetic reasons it should have the preference in women; and it would seem almost criminal negligence, when this operation offered a good chance of success, to remove a child's eye, thereby arresting in a measure the corresponding development of that side of the face.

5.—I do not think it should be performed in cases of pan-ophthalmitis, glaucoma, tumors within the eye or when the symptoms of sympathetic ophthalmia seem immediately threatening.

In recommending a difficult operation to take the place at times of a simple one, some positive advantage must be promised. These I would enumerate as follows:

1.—The artificial eye has a more extended range of movement.

2.—There is less sinking of the artificial eye, the lids close naturally over it and consequently there is much less of that fixed, staring expression so common in wearers of artificial eyes.

3.—There is less retention of mucus secretions which are apt to irritate the orbital cavity and render the wearing of an artificial eye painful or impossible.

4.—In children the orbit and surrounding tissues continue to develop far more perfectly.

In conclusion, I believe it the surgeon's duty to perform Mules' operation in preference to enucleation or ordinary evisceration whenever the personal appearance can be improved without detriment to the other eye or the life of the patient.

DISCUSSION.

Dr. Wm. Spencer: Dr. Bissell has so carefully and minutely described the technique of this operation, and has so plainly pointed out the ad-

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vantages over the old and less complicated operation of enucleation, that there seems little more to be added.

We must bear in mind that the operation of evisceration and the insertion of the globe, or Mules' operation, is not applicable in each and every individual case, but when we meet with a case where it is possible to perform it, the advantages to be gained make it the operation par excellence.

It is obviously inadequate to fulfill the indications where we have extreme phthisis bulbi, or in cases of severe traumatism where, for instance, the sclera has been much contused or burnt with caustics and is liable to slough.

In complications of this nature, however, a modification of Mules' operation can be performed, in which, instead of using the scleral cup for the insertion of the sphere, the eye-ball is removed and tenon's capsule becomes the receptacle.

While the typical Mules' operation is an ideal one, there are some contingencies that must be constantly kept in view and prevented, lest you meet with disaster and failure.

The one that few operators can lay claim to have escaped,—as it occurs in about thirty per cent. of cases,—is the escape of the artificial globe.

This occurs at the time of, or immediately following, the operation, within a few weeks. As a rule, when the wound has firmly and completely closed over the sphere, it does not subsequently give way and reopen.

Yet, as an exception to this rule, we must note the report of several cases in which the wounds reopened as late as five and six years following the operation.

The question in regard to the selection of the artificial globe to be used, is an important one. There seems to be no cases reported in which the glass globe has been broken after its insertion. Yet, a sharp blow inflicted on the stump might fracture it and leave the sclerotic filled with fragments of glass. To prevent such an action, hollow globes of gold, silver and celluloid have been substituted for the glass ones, yet they do not seem to have been extensively used. The greatest care should be exercised in the examination of the globe, to ascertain that it is perfect in construction. The slightest imperfection, such as a riughened surface, or a small opening, might be the cause of a complete failure.

Another part of this operation that requires our most careful study, is the suturing of the sclerotic coat, and it is to Dr. Bissell's method of doing this, rather than to the manner of making the incision into that tunic, that I consider to be the secret of his several successes. Early in the history of this operation, recommended by Mr. Mules and followed by many surgeons since, the catgut suture was generally used. The material of the sutures did not appear to be of much consequence; silk, horsehair, catgut, and silver wire have all been tried Silk and catgut were employed the most frequently, but the consensus

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of opinion favored a prepared catgut. It would naturally appeal to one's better judgment to use a suture that would hold the edges in apposition until complete union took place, and one that would not have to be removed. But, has the use of this suture and the disappointment in obtaining such a complete and perfect union of the parts so as to withstand the pressure and retain the globe been the cause of the large percentage of failures? If such has been the case, then the use of a silk suture which, if allowed to remain, will become encysted and not act as a foreign body and cause an inflammatory condition, should be the one universally used.

Mr. Mules says: "The results are not as disturbing to the normal reaction of the parts outside of the sclera, as in enucleation," and when the operation is performed under the strictest antiseptic precaution there is very little reaction; so that, by using the utmost care to avoid any accident, it would seem like the utmost neglect on the part of the surgeon not to give his patients the benefits and advantages this operation offers, whenever it can possibly be performed.

Dr. D. W. Wells: I should like to ask Dr. Bissell how he determines the size of the sphere to be used. I thought he said he brought the flaps together with forceps. Are we to understand that it is admissible to use as large a sphere as the flaps *can be made* to cover? Some operators claim the sphere should be very loose fit, so that the swelling of the tissue and subsequent shrinking will not pull the sutures out.

Dr. John L. Moffat: The doctor said that the vertical incision would begin about six or seven millimeters above and below the corneal border, but he did not give us an idea about the horizontal incision; am I to infer that he would have several globes on hand, and if one was too large, try another? It is essential that the oval be vertical?

Dr. C. J. Swan: I would like to ask Dr. Bissell why he excludes old cases of glaucoma from this operation—why is it not as applicable here as it is in other cases?

Dr. E. J. Bissell: I expected that there would be considerable opposition to this operation, because in such text-books, as "The System of Ophthalmology," you will find statements that the sphere is expelled in a large proportion of these cases before three years. Most of my cases are over two years standing and some over three, and there has not been a particle of irritation in any one.

I ascribe these good results to the way in which the sclera is brought together. I have no use for the catgut. I take the finest silk thread and split it in two strands. Those who have attempted closing the sclera have found it to be pretty tough. It seems to me that it is one of the operations which requires nice technique all the way through.

Regarding the question of Dr. Wells as to the size of the sphere, I think it is better to have it large enough to prevent an accumulation of blood around it, and I find that when it fits snugly it has the effect of sealing up the blood vessels.

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Regarding œdema, it is one of those things which is worse in our imagination than in actual experience. With careless methods, as in European clinics, where asepsis is not as perfect as we employ in private practice, I have seen marked œdema; but in my private practice I get no trouble I have no trouble with children and very little œdema and no crying with pain afterwards.

Regarding the width of the wound, referred to by Dr. Moffat, that is governed by the case; the point is to make it just as narrow as possible; you must take in the full width of the cornea, but if you have a case of marked anterior staphyloma, and the line between the sclera and cornea obliterated, you must go back and find as thick and healthy sclera as possible, so that in such cases it may be very wide. The size of the sphere depends somewhat on the amount of tissue I have taken out. If I take out a good deal of tissue it is going to take a small sphere.

The larger the sphere the more perfect will be the effect in wearing an artificial eye. Regarding its use in glaucoma, I have gone along with fear and trembling and have excluded glaucoma, knowing the liability of trouble to the other eye after these cases. I may get where I shall feel like using it, but so far I have excluded these cases. Success depends largely upon a man differentiating his cases carefully. It probably can be applied to some cases I have passed over. If the sphere comes out in any of my cases, I shall be very glad to report it to this society, but I believe they will stay in. I believe the silk sutures will hold them; and there will be no irritation. There is a knack in fitting artificial eyes. It is hard to get one which is adapted to these cases. They are not curved right.

Dr. G. M. Haywood: Do you use glass or silver balls?

Dr. E. J. Bissell: I have used glass. These gold ones were just sent to me and I think in my next case I shall try them. They have the advantage of not being easily broken, although I have not seen a record of cases where the glass ones were broken. The gold ones are certainly very smooth and nice.

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THE AMERICAN GRIPPE: ITS SEQUELAE AND TREATMENT.

By Benj. S. Stephenson, M. D.,

Lowell, Mass.

THE American grippe, as its name indicates, made its appearance on this side of the ocean in 1889, and was named by the newspapers, The Grippe.

It was similar in its form to the influenza that had been ravaging Europe for a number of years at intervals, but was more severe here, and the death rate which followed it was very high. One of the first men on this side to describe and classify it was Seiler, of Philadelphia; also, Dr. Glasgow, of St. Louis; both of these men read papers descriptive of it before the American Medical and Laryngological Societies.

It is a specific, acute, infectious disease, distinguished by the immensity of territory over which it extends, the number of people it affects, and the fact that it will appear for a time and then not come again for eight or ten years.

Although we have reason to think that it originates from a specific, organized pathogenic germ, yet this has not been discovered as yet.

It has one distinctive feature in that it attacks all alike of high or low degree, those in the best of health succumbing as readily, and oftentimes having it more severely than the weak. Age or sex makes no difference, many seemingly away from all chance of infection, and who have not been exposed to colds, being attacked.

In its onset, owing to the fact that it may affect different parts of the body, it shows a variety of symptoms, and yet there are a few that are distinctive.

Attacking the patient without warning, we have in all cases a high temperature often running as high as 104 and 105 degrees, with the pulse seldom going above 100, skin moist and perspiring freely on exertion, chills, severe headache, general depression of the vital forces, great pain in the back and loins, so that it will quickly overcome the strongest constitution.

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With the backache is generally associated muscular and bone pains. The eyes feel sore to the touch and pain on moving, showing that the external muscles are involved.

By grouping the disease under four heads, we shall find it much easier to classify and describe it.

Namely: the typhoid, catarrhal, gastro-intestinal, and rheumatoid In the first we have the fever, languor, headache, pains in the muscles and back present in a severe form, we speak of it as the typhoidal. In the second, if we have many of these symptoms accompanied by a train of local symptoms, arising from the respiratory organs being affected, which manifests itself by coryza, hoarseness, profuse lachrymation, and dizziness, or if the bronchi and smaller bronchioles are involved, we have a dry cough and rales over them on auscultation.

The gastro-intestinal form is rarer than the others, here in addition to the constitutional symptoms we have nausea and vomiting, pain located all over the bowels and diarrhœa.

The last or rheumatoid has the constitutional symptoms prolonged and frequently some branch of the facial nerve will manifest its location by severe paroxysmal pains.

The duration of the disease varies from seven days to two or three weeks in the severe cases, and especially in elderly people ending up with heart failure and death and noticeably so in those cases where the treatment has been quinine or the coal tar derivatives. In the epidemics of recent years we have all probably noticed that among the first symptoms were those of intense smarting and burning of the eyes and nose, sneezing, coryza and profuse lachrymation, pain in the pharynx and some sore throat; this followed by redness and a swelling of the mucous membrane, throughout the upper air tract. The body of the mucous membrane swollen and doughy when pressed, but has not the ordinary acute inflammations. On incising there is no exudate, except a tenacious, ropy, straw-colored drop of serum.

Wherever this condition of the mucous tract occurs it is bound to give rise to symptoms of dyspnœa and occlusion.

The results of an inflammation of this character passing along the Eustachian tube into the middle ear, mean a great deal of discomfort to the patient. The first effect being pain, of a throbbing, beating character, increasing in severity and culminating in a spontaneous rupture of the drum membrane, with an escape of a limpid, straw-colored

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fluid, changing to a thick yellow profuse discharge which may last for some time, unless it has good care and treatment.

Or the inflammation may proceed into the mastoid with its still severer train of symptoms, and with the result that the mastoid has to be opened in the end.

In all these cases the patients are left with annoying tinnitus, deafness which in a large number of cases, especially in elderly people, does not disappear, but grows worse steadily.

The treatment of these cases of grippe does not come under our control as specialists until the acute attack of the disease is passed as a rule. And we see them as they come to our office with the usual tale of woe: "Doctor, I have just had the grippe and I can't hear with my left ear, or perhaps it is the right, or both. I have such a roaring noise in my head that I am just about crazy." Or if it is a case of acute otitis media we may be called in for a paracentesis, or, perhaps, for a secondary mastoiditis. In either case our procedure is of a surgical nature and we have a clear field and a practically sure result of a quick recovery.

But if it is a case of otitis in which nature has been allowed to work out its own salvation, we have a more difficult task before us, and one that is not so certain in its recovery.

In the first class of cases, our treatment consists in first cleansing the nares anteriorly and posteriorly with some antiseptic and alkaline wash, then inflating the middle ear thoroughly, following this with pneumatic suction massage for five minutes with a stroke of not more than 120 to the minute, using this three times a week for one or two weeks, and at the end of this time following it up with phonetic and combination massage, until we obtain the result we wish, using our internal remedies as indicated. In the second class of cases, the result is much quicker, as we can make a clear healthy field and keep it so until nature heals it. For the resulting deafness which is apt to remain after the operation, I use the phono-pneumatic massage the same as I would in any case of deafness, beginning with the phonetic and ending up with the combination and pneumatic, and in a good proportion of cases have obtained a recovery.

In the cases of otitis which have pursued their own course, my method of treatment has been to cleanse the meatus with a warm 5 per cent. solution of Boric acid, dry with absorbent cotton, then use pneumatic suction until I could get no discharge, and have them use at home two

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or three times a day a solution of Alcohol, Boric acid and Water as warm as could be borne, then dry with cotton on a tooth-pick, using the remedies indicated internally; when the discharge had stopped, following it up with the phonetic and combination massage for the deafness which existed.

As a result of this method of treatment in cases of deafness and otitis media following the grippe my results have been entirely satisfactory to my patients and myself.

DISCUSSION.

Dr. C. H. Hubbard: In considering the sequelæ of *La Grippe,* one is reminded of an anecdote attributed to an Irishman, who said that "these cases of grippe always remain sick a long time after they get well." Paradoxical as it is, there is much philosophy in that remark. Grippe affects most profoundly the nerve-centers, and it is this fact that patients are sick so long after they get well that accounts for the difficulty in successfully treating these cases of tinnitus and deafness. It frequently happens that no pathological lesion seems to exist to account for the symptoms complained of. These are cases that tax the aurist to the utmost.

Dr. H. S. Willard: I would like to ask Dr. Stephenson if he has noticed during the past year in any of his cases of grippe an erythematous eruption coming on, lasting two or three days, with slight desquamation and much itching during the state of eruption. I have had two or three such cases this winter, and I know of several cases in which this peculiar rash has occurred. It resembles the rash of German measles, though with all the characteristic symptoms of American grippe.

Dr. G. W. McDowell: I wish to make a historical correction. It seems to me that I have read in "Raue's Pathology and Therapeutic Hints" a description of epidemic influenza with a sub-title of Grippe. I think he gives it as grippe, stating that it first appeared in this country in the year 1840, but of that I am not positive. I have not looked at the article for a long time, but this impression I have.

Dr. B. S. Stephenson: Regarding the erythematous condition, I have not seen those cases, because I have not had any general practice, although my wife has mentioned having one or two persons under twenty years of age having this affection of the skin. I have not seen Dr. Raue's article which Dr. McDowell mentions as having described La Grippe. I had seen an account of influenza, but not classed as the "American grippe" until the time I have mentioned.

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CATARACT—ABSORPTION—ACTION OF SUCCUS CINERARIA MARITIMA.

BY BUSHROD W. JAMES, M. D., LL. D.,

Philadelphia, Pa.

THIS paper is offered in an endeavor to find out the merits or demerits of the remedy considered.

One of the principal remedies claiming attention for cataract absorption is the *Cineraria maritima.* It is a plant belonging to the compositæ. It was first and principally found in Venezuela, but now can be obtained in the West Indies and in nearly all parts of the world.

It is the only one of a numerous genus whose therapeutic properties have been proven, partially however, for our Materia Medica and its use has extended widely over the world for cataract absorption since its introduction to the medical profession by Dr. Mercer, of Port-of-Spain. Allen, Farrington, Hering or Hale make no note of provings of this remedy. Dr. Mercer's case and his personal experience with the drug, as given in a circular issued by the Walker Pharmacal Co., of St. Louis, is as follows: "His vision became slightly impaired and subsequently a cataract of the soft lenticular form became apparent, and for fourteen years his sight kept growing worse in both eyes. The left eye, which was the better of the two, was operated, but without success,—this was in 1882. His vision continued to diminish until in 1888, when he became totally blind. His friends persuaded him to try *Cineraria maritima.* This he did, as he felt he had nothing to lose even if it was not a success. After instilling two drops of the juice into each eye, three times a day, he was able on the fourth day to perceive a faint glimmer of light by the right eye and later on in the same year, under a good light, he could discern figures, faces and even the hands of a watch. The left eye, which had been operated upon, did not improve so fast.

"The *Cineraria maritama* seemed to gradually disperse the apparent curtain of impenetrable darkness until perception of light and unmistakable vision were gradually restored."

Just before the flower bursts into blossom the plant is in its fullest vigor and the success more potent and abundant; this is the time that the juice is extracted from the leaves, stems and flowers, and seems to be the most effective preparation of the drug. An important fact to be remembered is that it is necessary to use only the fresh juice of the wild

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growing plant, which is imported from South Africa, the success of the cultivated plant not being considered effective.

The juice, which is somewhat acrid, when instilled into the eye produces a slight burning sensation which lasts about two minutes; then a lachrymal discharge slightly discolored by the succus is noticeable, but the improvement is said by some writers to be endurable and progressive; the Luyties Homœopathic Pharmacy Company, of St. Louis, states that it produces little or no permanent inflammation nor danger of injury to the eye. They also claim that it acts directly and only upon the opaque matter of the lens or its capsule, causing its dissolution and subsequent absorption. One or two drops should be instilled into the eye several times a day and is sold by them for one dollar per drachm vial.

Although formerly not widely known, the juice of the *Cineraria maritima* has been used for some time in tropical countries for the cure of cataract. Many patients having cataracts will seek any and every advertised treatment rather than have an operation performed and numerous remedies have been tried with variable reports as to success, internally, such as *Chimaphila umbellata, Causticum, Phosphorus,* etc.

The use of the knife, of which every patient has a dread, was the only way of getting rid of this troublesome affliction, and while in some cases it is still necessary to operate, it is advised—Dr. Mercer claims—to try this remedy first. A number of quite remarkable cures, after unsuccessful operations it is claimed, have been made. The Walker Pharmacal Company say it subdues inflammation of the iris and ciliary body, which follows when the cortical substance of the lens remains in the anterior chamber and state that it is used by all leading ophthalmologists of this country, both in private and hospital practice, a statement which is not borne out by facts on considerable inquiry.

I will now offer some evidence from the pharmacies and profession as to the merits or demerits of the remedy as ascertained to this date.

The Walker Pharmacal Company claims much for this preparation and the company in a printed pamphlet gives ten testimonials of the successful use of this preparation in cataractous absorption. No failures have been given as far as I have seen.

Ludyties Homœopathic Pharmacy Company summarizes eight cases from different individuals, all of which were successful in the removal of the cataractous opacity. No data of the failures are given by this company either, and the difficult task of obtaining many statistics is before us.

Now a word upon the advertising of uncertain remedies for such

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ocular diseases as cataract and of opacities by pharmaceutists whose duty it is to sell reliable remedies and not offer anything to the laity unless fully endorsed by the profession at large, or by our National Societies, or the State or local organizations and specialists of our school of medicine. Nothing should be sold to members of the medical profession either unless a thorough reliability and value has been established first by the profession itself and proper "provings" by authorized "provers" of remedies. This misuse of the privilege of coming before the laity by large manufacturing chemists, and offering their remedies without reliable professional "provings" being made, and the selling of them direct to the laity in the proprietary style as good for a list of diseases or for special symptoms is reprehensible and is an encroachment upon professional rights and the duty of the profession to get reliable prescriptions from educated oculists or physicians. These granules, powders, discs, medicated tablets, or other form of remedy, preparations which are offered to the profession and to the laity at random in order to make large sales of their drugs, is certainly worthy of our disapprobation.

A homœopathic pharmacist should, we think, not sell unreliable preparations or the mixture of several proven remedies as special prescriptions, but confine their sale of homœopathic remedies strictly to well-proven drugs and their attenuations and offer only strictly homœopathic preparations.

The subject needs attention and the custom is widely extending and is belittling homœopathy and seriously injuring the good cause and the proper application of the law of the similars.

It becomes the duty of this society then to consider the merits and demerits of any preparation that would be sold to the community by druggists who are, by the laws of most of the States and their cities, properly not considered to be members of the medical profession and, consequently, every prescription given out by said drug house is non-ethical and is an infraction upon the laws of the community and the practice of so advertising all such special remedies and special prescriptions to the laity should be condemned by such societies as this or, by the National Society itself—the American Institute of Homœopathy.

What seems to be needed today is strictly homœopathic pharmacies for the preparation and sale of nothing but homœopathic preparations, prepared according to Hahnemann's methods or later methods of the pharmacopœias and so denominated and vouched for by the pharmacist who prepares them as pure and made in strict concordance with correct pharmaceutical methods.

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The succus *Cineraria maritima,* concerning which I desire to offer testimony pro and con, as to its efficacy, is sold in small vials of about a dram in size, at a dollar per bottle. A circular is issued, accompanied by the testimony of those who claim to have received a cure or great relief by a local application of this remedy to the eye. If there is any positive merit in the preparation it is time we fully investigated its real value and asserted it. Hence, I have written to almost all the oculists of our school of medicine in this country, to ascertain their experience with this remedy. I will simply state that I have tried it faithfully in two long standing cases of cataract (elsewhere referred to) in old people for many months—in each case without any beneficial action, and as the patients were unwilling to pay for such expensive preparations for any great length of time the treatment could not be maintained indefinitely; but I think I have given, in these two cases, a sufficient test to warrant me in the assertion that the article is an overestimated one, and should not be widely advertised to the laity by any conscientious pharmacist. Oculists will always test a new remedy and decide upon its merits; the laity cannot well do this.

I will now give you the testimony as briefly as possible, in order that you may judge for yourselves as to the merits or demerits of the remedy.

SUMMARY OF RESULTS IN 102 CASES.

Number Cured.	Benefited Somewhat, 71.	Entire Failures.	Oculists written to who have never used it.	
Data not sufficiently complete to make a full and accurate statement. Sixteen medical men and one layman claim a cure or great benefit in the seventeen cases I examined from the circular of the pharmacies.	Dr. W. S. Phillips' proportion of benefit, one to sixteen. Dr. H. B. Hills, one in twenty-six cases. Dr. Perkins had one with moderate success and Dr. J. M. Fawcett one. Dr. Frederick D. Lewis, in six reported cases had some beneficial results. The report of these cases is quite interesting.	11	16	No benefit under title of a "number of cases" would make about twenty-five more, an uncertain quantity.
		Used in Pterygium, called Cataract.		Used in Corneal Ulceration with Benefit.
		1		2

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It was my intention to give the relative ages, as to whether very aged, middle aged and younger cases, but I could not glean a satisfactory amount of information on this point to be of any use.

To prove that cataracts often disappear of themselves: I have made free extracts from the article of Walter L. Pyle, M. D., in the Philadelphia Medical Journal, March 17, 1900, "The Spontaneous Disappearance of Senile Cataract," in which he states that ordinarily after once losing its transparency, the cortex of a cataractous lens remains opaque unless disturbed by traumatism or operation. Absorption may take place in the stage of hypermaturity to such an extent that the opaque layers may become thin enough to permit noticeable improvement and in young people to produce complete transparent sections in the opaque layers; but in senile cataract with a hard nucleus it is rare for any spontaneous restoration of sight to occur.

Persons formerly presbyopic have occasionally, by the development of myopia, been enabled to read without glasses for years; and sometimes by the use of a concave glass complete acuity of vision has been restored.

Norris reports several interesting cases of this nature and states that in some cases the incipient myopic changes had been delayed 25 years, but, unfortunately for the patient, opacity of the lens soon follows.

Cases of spontenaous disappearance of senile cataract occasionally being reported dispels all doubt as to the accuracy of the statement. In 1885 Brettauer, of Trieste, reported 3 cases, in all of which he had at one time extracted a cataractous lens from the fellow eye. There being no history or sign of injury, operation, or disease, the cases were carefully watched for years. These were genuine cases of spontaneous absorption of senile nucleocortical cataract without injury to the capsule. The correctness of this statement was substantiated by Becker.

Analogous observations have been reported by such competent authorities as Warwatz del Campo, etc.

Dr. Pyle makes five classifications of the reported cases as follows:

First: Cases in which there was absorption after spontaneous rupture of the anterior or posterior capsule.

Second: Cases in which there was spontaneous dislocation of the cataractous lens.

Third: Cases in which there was intracapsular resorption of the opaque cortex and sinking of the nucleus below the axis of vision after degenerative changes in Morgagnian cataract without rupture of the capsule or dislocation of the lens.

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Fourth: Cases in which there was complete spontaneous resorption of both nuclei and without reported history of ruptured capsule, dislocation or degenerative changes of the Morgagnian type.

Fifth: Cases of spontaneous disappearance of incipient cataract without degenerative changes of the Morgagnian type.

Fifth: Cases of spontaneous disappearance of incipient cataract without degenerative changes or marked difference in the refraction.

In regard to the 1st class—spontaneous rupture of the lens capsule, he states that traumatism may cause absorption of a cataract by opening the lens-capsule, and in the operation of discission for the cataract of young persons the anterior capsule is purposely lacerated, allowing the aqueous to enter the lens-substance and effect absorption. But this operation is impracticable in cataract of later life as the sclera has become tough and resistant and the swelling of the lenses after discission in an adult eye is very likely to cause great increase of intraocular tension and reveal inflammation.

But there are cases in which accidental perforation of the lens-capsule has led to absorption of a clear or opaque lens without serious consequences. It rarely happens that the capsule of a cataractous lens is ruptured spontaneously, but Peachy reports a case of spontaneous rupture of the anterior capsule, with discharge of the opaque mass into the anterior chamber, followed by ultimate absorption and good vision.

There seems to be some doubt as to the correctness of this report, it being either misread or found to be incorrect by more scientific observers. It was in the case of a man of fifty years, whose left eye had become cataractous after an attack of inflammation of glaucomatous nature. He was blind for years, until following a renewal of pain and fullness, the patient felt something give away, and on raising his lid, saw again and continued to see up to time of report—which was six months afterward, and he was able to read without glasses; but this seems almost incredible unless the patient had been very myopic. The glaucomatous attack might have been due to spontaneous rupture of the capsule or it may have been a spontaneous dislocation of the cataractous lens.

Higgins recalled a case, a senile cataract, in which the interior capsule spontaneously ruptured, causing glaucoma for which iridectomy was performed. After a subsequent extraction of the remainder of the lens there was good vision.

In 1881, Arlt reported a case of spontaneous rupture of the anterior capsule of a cataractous lens. The patient, a myopic woman of thirty-

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four years, had suffered detachment of the retina four years before. The blind eye, which had become cataractous and quiet, became suddenly inflamed and on oblique illumination it was seen that the lower part of the anterior chamber was filled with remnants of disorganized lens, which were evacuated by corneal incision.

Bitzos mentions a case of rupture of the anterior capsule upward and inward in a cataract of four years' standing, with absorption of both cortex and nucleus—the patient was sixty years of age.

It is believed that when the posterior capsule is ruptured, the vitreous acts similarly to the aqueous after rupture of the anterior capsule.

In his works on Wounds and Injuries to the Eye, White Cooper reports a case in which the injury to the posterior capsule after nonperforating traumatism could be plainly seen through the slightly hazy lens. Treacher Collins mentions a case in which rupture of the posterior capsule was demonstrated after enucleation. The eye was injured by a stone and disorganized lens-matter was seen extending into the vitreous. Owing to the weak solvent action of this humor, the anterior portion of the lens was still clear.

In some cases rupture of the capsule may be caused by separation from the zonula. Brettauer reports such a case. There was mature cataract in one eye and unripe cataract in the other. The mature cataract was successfully extracted and the patient was lost sight of for fourteen years. At the end of this time the lens in the unoperated eye was very much shrunken, containing only a small nucleus and cholesterine crystals, although the capsule was still intact. Four years later, the nucleus had disappeared, and at the lower margin of the pupil was an opening indicating the separation of the capsule from the zonula. In spontaneous dislocation of the lens the rupture of the zonula may similarly involve the capsule.

Although lacking in detail the various cases of spontaneous disappearance of senile cataract suggest glaucoma or iridocylitis.

In the second class—spontaneous dislocation of a cataractous lens, Dr. Pyle says spontaneous dislocation of the crystalline lens is always the result of some previous pathologic changes in the eyeball.

In cataractous lenses, Becker believed that the contraction of the newly-formed spindle-cells and effused material on the capsule might be the cause of separation from the zonula.

It would be natural to expect greater fragility of the zonula in a senile eye, particularly if there are associated degenerative changes in the lens.

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In such cases, doubtless, there are great alterations in the ciliary vessels and impairment of nutrition to both zonula and vitreous.

When the vitreous is partially blind, there is still greater liability to dislocation.

Again in cases of partial luxation or subluxation there is increased tension on the weakened zonula and disturbance of the vitreous by the free movement of the lens, causing a progressive increase of displacement.

The cataractous lenses are easily luxated and may sometimes be separated from the zonula and extracted without rupture of the capsule or loss of vitreous.

Coughing, sneezing, a misstep, etc., may hasten dislocation, but be entirely forgotten by a patient when consulting a physician in regard to traumatism.

Dislocation of the lens is also very common in hydrophthalmos of young persons, in whom the zonula had become so stretched by the enlargement of the eyeball, that it is very tenuous and easily ruptured.

Cases of spontaneous luxation of a transparent lens in its capsule are numerous, and instances have been recorded by such well-known observers as Balfour, Schirmer, Duval, Hippel and others.

The dislocated lens generally sinks downward (a dislocation upward is either traumatic or congenital) into the anterior chamber, from which it is ordinarily removed; or it may cause no symptoms to indicate surgical treatment, and finally be absorbed entire by the aqueous. Occasionally the lens may fall into the vitreous and be absorbed without giving rise to serious consequences. This was often the result of the old operation of reclination.

Recordon reports a case in which a patient of seventy-five, while waiting in a hospital for cataract extraction, had sudden return of vision after dislocation of the lens backward, the lens disappearing from the vitreous in a few days. Siebold, quoted by Norris, reports a case of spontaneous dislocation of a cataractous lens. The lens was wabbling with the motions of the eye, and an operation was advised, but refused, and a year later the patient had a clear and mobile pupil, and exhibited herself as a case of cure without operation.

The lens may remain in its dislocated position for a long time without causing serious symptoms, and a transparent lens may be dislocated and not become opaque for many years.

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A case reported by De Wecker retained its transparency in the vitreous for eight years and C. Jaeger claims he saw a lens remain transparent in the vitreous for thirty years.

Theobald reports a case in which a lad of eighteen had for ten years been able to voluntarily shake a dislocated transparent lens into the anterior chamber, preferring this to using cataract glasses. Later on the lens became opaque and the capsule burst, causing inflammation.

Williams mentions a case of spontaneous dislocation of the lens in both eyes without loss of transparency. There was occasional prolapse of the lens into the right anterior chamber.

After complete dislocation of an uncomplicated cataract, as soon as the lens has left the pupillary space the patient should experience restoration of vision, but increased by the application of a convex lens, although dislocated lens is generally bad for the eye.

If a fatal glaucomatous inflammation does not intervene, vision is usually destroyed by degenerative processes of the ciliary process, choroid, retina, or vitreous. In 1836 Sichel reported cases of spontaneous dislocation of a cataractous lens; one was a patient of eighteen with congenital cataract, and another, a man of eighty, having a partial dislocation followed by glaucoma.

In 1844, Eustis reported a case of a man of fifty-seven having a cataract, whose lens first became opaque fifteen years previously. After being blind five years, extraction was advised. Finally the cataractous lens became dislocated without the slightest traumatism.

In 1846, Fischer mentions several cases of the same kind; in one case the patient attributed his recovery to the use of an ordinary collyrium, which he highly recommended for blindness.

DISCUSSION.

Dr. L. Y. Baker: My own records are very small, but it seems to me that there may possibly be something in this drug, if it is correctly worked out; I do not say there is. I think, at the present time, there is only one sure cure for matured cataract and that is the knife. I think there is just as sure a cure for incipient cataract in homœopathy and the proven remedy, but I do not believe that, beyond the incipient stage, there is very much to be done at the present time. Now, *Cineraria maritima* was first had from Venezuela, so reports say. Since that time it has been found in other portions of the world, especially along the Mediterranean. The efficacy given in the reports of its successful use may be from the fact that it was used fresh from the right plant, and the proportion of failures may come from the fact that almost any juice might have been taken; but it is dif-

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ficult to say. The case of Dr. Mercer's seems to be unique in its way. However, I think it might be well to get positive testimony on that fact and, more than that, to try to get some genuine juice of the wild plant for experimentation. It is rather hard to condemn anything of this nature, for the reason that we have only a few drugs at the present time which have any great effect on opacities of the eye. If we can add to our Materia Medica in any way, even through a drug which seems, so far as Dr. James' testimony is concerned, to have only small virtue in it, I think it is doing homœopathy and medical practice much good.

This plant, the "Dusty Miller," is a small shrub, growing from one to three feet high, found mostly on the sea-coast, and blooms in a wild state in July and August and in a cultivated state from June to September. Leaves are dark green above, lighter, of a silky appearance underneath, and the flowers are yellow and appear in clusters. As Dr. James says, it is of the order of compositae. Of this plant there are over a thousand species. Now, of those thousand species there might have been gotten by these pharmacal companies almost any one except that used by Dr. Mercer. That is another difficult point for solution.

This plant is said to have been used by the natives of Venezuela for a number of years, and was suggested to Dr. Mercer by a native of his own home, and the possibility is that more testimony may be had from that neighborhood. Now, the reports from that neighborhood state that only the juice from the flowering plant should be used; that is, the juice from the plant that is gathered during June, and that plant must be the wild plant. There is a great possibility that a great deal of the *Cineraria maritima* that is sold to the different pharmacists is either from the wrong plant or collected at the wrong time or both. My own experience with the drug has been confined to three cases. The probabilities are that I would not have used it on more than one case if I hadn't had a pretty fair success with the first. The case was an old man with a senile cataract of the usual variety. I put him on the drug, which he used very conscientiously for six months. At the end of that time his vision had improved to such an extent that I refracted him and gave him his proper glasses; he had an idea that he was cured and I lost sight of him. I do not know how the case went on, for I do not know where he is now.

In the second case I had absolutely no results.

The third case in which I used it came under my observation just as I had given up all hope in the second case, so that in that case I stuck to the homœopathic remedies pretty closely. The case was a man about fifty years of age, who had developed cataract in the right eye about a year before I first saw him. The eyes at that time were in this condition: The opacity had extended beyond the confines of the iris in the left eye and the edge could not be seen unless the pupil

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was dilated. In the right eye the nucleus only was opaque, but he had given up reading. The case came to me from an oculist in the City of Mexico, who had diagnosed it as cataract, and told him that it would go on to the usual termination, but that he had better keep the eyes under observation. I started in by using *Calcarea fluor.* on him in the same routine way that I use it in most of the incipient cases. I used the 6x trituration internally and at the same time gave him a local application of Calcarea *fluorica* 6x, 3 grains in 2 drachms of rose water, combined with a small quantity of boric acid. Inside of six months all of the opacity of the right eye had disappeared and he was using his eye as usual. The left eye seemed to make pretty fair progress, and at the end of that time I was able to detect the edge of opacity beyond the end of the undilated pupil. Up to last fall the case was doing very nicely, but during the winter the left eye seemed to remain *in statu quo* and about three months ago I decided to put him on *Cineraria maritima.* I have seen him once from that time until the present and day before yesterday I wrote him, asking him to give me a statement of his condition at the present time, and yesterday I received a rather non-committal reply. I said nothing when I gave him *Cineraria* but I told him to keep on and note whether there was any improvement, and let me know. The first time I saw him after giving him the *Cineraria* he said that there was some improvement, but I think it doubtful, and think the drug in this case can be reported a failure.

Dr. E. J. Bissell: It seems to me of all subjects in the range of ophthalmic work we ought to approach this one with a something more of a scientific spirit than has been manifested. Statistics have been collected, not only in this country but in Europe, showing that of immature cataracts examined over a period of seven years, quite a percentage—I cannot give the exact figures—showed at the end of seven years some improvement; quite a percentage showed no change; a certain percentage had gotten worse and some had gone on and developed into mature cataracts. In facing this problem we are confronted with these facts. That some at the end of seven years showed improvement convinced me that it is not out of the range of possibility to do something non-surgically for immature cataracts, but it seems to me unfortunate to place before a society which claims to be scientific the testimonials of men whose opinion on eye work we cannot credit and repeat them in the journal of this Society. Now, for one, I wish the doctor could see his way clear to leave out these testimonials which have been sent out by pharmacists that send out a drug advertised to do a certain thing. I say that it is a reproach to this Society to repeat these testimonials and pay to have them printed.

I am in sympathy with the doctor in investigating this drug. I have used it somewhat. The doctor wrote to me to give him my opinion, but I have used it so far in conjunction with something else—some other auxiliary treatment—and, therefore, in the spirit

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of scientific accuracy I refrained from passing an opinion. I do not say that it is worthless; I am rather inclined to the opinion that it has some value, but we will never get at its value in a paper like this, and we will injure the status of this Society if we pass off the opinion of Tom, Dick and Harry as accurate. I think we should get the opinion of ophthalmologists, eliminating the testimony of men whom we do not know personally and who do not in the profession claim to be ophthalmologists.

Dr. G. A. Suffa: I wish to relate two cases of beginning changes in the cortex of the lens that were under Causticum for a long time:

Case One.—Male, age 60. First seen about eight years ago; condition of R. lens fine; well-defined striations in anterior and posterior cortex; central cortex and neucleus clear; viz., $\frac{20}{20}$; no refractive error. Under *Causticum* the condition remained the same for two years; then gradually advanced to maturity. Had this case gone from under my care at two years a report could have been given of the virtue of *Causticum* in checking the advance of cataract.

Case Two.—First seen about nine years ago; a woman about the same age; had vis. of $\frac{20}{15}$ O. U., with lenses correcting a hyperopic astigmatism; changes in lenses were about as in the above case, except that in inferior quadrant the striae had coalesced. Under *Causticum* vision and changes in lenses remained the same, until about one and one-half years ago, since which time has varied from $\frac{20}{15}$ to $\frac{20}{30}$ O. U., and the opacities in lenses are increasing in number and size, and a general haziness is beginning between the striae. This case will in time go to maturity.

I relate these two cases to show how easy it would have been to have reported benefit from *Causticum* administered internally, even after several years' use, had the cases left my care before the changes for the worse had taken place, and to show the necessity for extreme care in reporting cures by internal medication, for I feel that we, as homœopaths, are doing our cause as much, or more harm, among the old school practitioners, when we report, and claim that we cure, cataracts in this way, than do the homœopathic pharmacies sailing under false colors.

Dr. G. M. Haywood: I am pretty well acquainted with the vice president of Luyties Company. I graduated twenty years ago in St. Louis and then they were doing a straightforward business. Now, they put up homœopathic remedies in that great establishment and they are advertising their goods. I think Lehn & Fink were the first importers of the drug. Luyties got hold of it, and in order to get it before the homœopathic profession, they advertised it in their journal. In order to get it before the allopathic profession they put it up under the name of the Walker Pharmacal Company. The merit of the drug is through the advertising they give in their journals. Dr. James brought these fourteen testimonials up not to advertise the drug and not to put them in the journal for advertisement. I would

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like the opinion of some reputable oculist who has tried that remedy. I sent for some of Lehn & Fink's and for some of Luyties', but they did not do any more than to irritate the eye and it passed off without any effect.

Dr. C. Gurnee Fellows: I have had some experience with this drug and it is against its claims. As far as testimonials are concerned, I agree with Dr. Bissell in reference to publishing them. I do not think that we should repeat testimonials that we can't depend on, for it is an advertisement that harms us. I believe most of the testimonials published in this journal, which is a trade journal, and which we see again and again, are without foundation. Some of the names I have taken up in Polk's Directory, and I believe the majority of these people do not exist. They make newspaper articles and they put them in for padding. "Dr. Jones' *Cineraria* is sometimes good for cataract," and so people have taken it up and given it a false standing. I have used it in a great many cases. I have seen it used in practice by other physicians. I have kept a record of others and my own cases and can not say that it is of value.

Dr. F. D. W. Bates: I would not like to say anything against the remedy. I have had no experience with it whatever and do not know anything about it. It may be a good thing, but my belief is that unless the cause of cataract is removed no drops put into the eye, or medicine that we can give internally, will remove a cataract. I have used in past years all methods. I have used the homœopathic remedy, I have used massage treatment, I have used galvanic electricity and various methods, and sometimes I thought I saw good results, especially from the remedies given internally, but of late years I have come to believe that the best thing we can do for an immature cataract is to put the eye in a condition as free from strain as possible—paralyze the accommodation, get at the refraction and correct it.

Dr. C. L. Rumsey: I think a great many errors creep into the journals. Of course no one can diagnose without making an ophthalmoscopic examination. On two occasions where I have had patients tell me they were entirely relieved of cataracts, I have at once asked them if they had an ophthalmoscopic examination, and while many of them did not know what that meant, I explained it sufficiently to get a clear answer in the negative. I have had two firms, of both of whom I have purchased this remedy from, write me, asking what my opinion of the drug was. I have simply put their letters in the waste basket, knowing what use they would make of them. We want to be very cautious in writing to anybody. I think when Dr. James wrote me, I told him that I could not give a definite opinion. I had thought the matter over carefully, but had not made up my mind. However, I was quite sure that my experience had been that I had never cured any cataracts with this drug. I told my patients (I did not tell them it would cure), but that it might limit its growth. Those who study the pathology of cataract know that such pathological lesions elsewhere are not always curable by remedies. It generally requires more heroic remedies.

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Dr. D. W. Wells: Perhaps a year ago, I wrote to Luyties Company, asking for the addresses of the physicians giving these testimonials. At that time it was stated in the circular that the addresses would be furnished upon application. I received a reply to the effect that these men were too busy to answer and the address of some other physician was given. It seems to me that is sufficient to show the value of all the testimonials given.

I am sorry that Dr. James did not give us more of his own opinion. Perhaps he intends to do so in the summing up.

I was interested in what Dr. Bissell had to say as to the natural history of cataract, and I think we ought to bear in mind the law that, unless we can show a certain drug produces a greater percentage of cures than would naturally take place without any drug, we have no right to claim that the drug has any effect in producing the cure.

Dr. B. W. James: Of course, you all know that I have only one object in the preparation of this paper, and that was to establish the truth. All of us want to see a scientific elaboration of this subject and some definite data given by which we can guide ourselves with regard to its use, and any other remedy that will act on the lens. It is a very important matter to a large number of our clientele. A great many people in every part of the world are interested in the subject of cataract, especially the older people, and if we do not investigate the subject and do not take the testimony on both sides we cannot get at the truth. It is too early in the investigation yet to know whether these people who advertise this remedy are reliable or not. I am very glad to have the testimony of the members here; that is what I am aiming to get at, and so far as the testimonials I have given here pro and con are concerned, I will give them fully; otherwise the society would not have considered the paper complete. Then again each one can judge for himself. I hardly think it worth while to publish these details, the summary will answer our purpose. If this society will allow me the privilege of reading some of these letters, in summing up the facts as I have collected them as testimony, I will be glad and will hold them myself for future use and reference, as I am not yet done with this remedy, nor the testimony which may come in, but I would not like to prepare and read a paper without evidence to sustain my position. Hence I have given you the full details here today in order that you might consider them all. I would like the members to give me as much testimony in the future as they can as to the use of this remedy, in order that we may establish its veracity or otherwise. How are we going to know anything about the action of homœopathic remedies on the lens, unless we do get in all such testimony? If any remedy in the Materia Medica will absorb a cataract we should know it, and we as a Society ought to record all these data, and I am only too glad to bring all these data that I have gathered to you, and eventually I hope to sift it out, so that it will either be established as a reliable and valuable remedy for such cases or otherwise.

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OFFENSIVE BREATH. THE CAUSE AND CURE.

BY GEORGE M. HAYWOOD, M. D.,

Rochester, N. Y.

THE title of my paper, while not bearing the technical and mysterious name to laymen that is given to most of the papers of this society, is, I believe, of sufficient importance to the specialist to give a few minutes to its consideration.

All of us come in daily contact with people with offensive breath, due to drinking malt or spirituous liquors, smoking, eating odoriferous food, such as: onions, garlic, limburger cheese, etc., or due to ill-kept and decayed teeth; or to disordered or diseased condition of the stomach, where the food and drink ferment and cause eructations of horribly smelling gas. Many cases of offensive breath are due to a torpid condition of the liver, causing a heavy sodden putrid breath, offensive alike to the victim and to those with whom he comes in contact. Fever patients, especially typhoid, intermittent and bilious, have offensive breath almost as characteristic as are the odors from the exanthematous diseases, such as: smallpox, measles and scarlet fever. But it is with odors arising from pathological conditions of the nose and throat that we are chiefly interested.

The most offensive breath with which we come in contact, and which fortunately is rare, is due to syphilitic ulceration of the nose; arising usually from a necrotic condition of the bones or cartilages and to decaying mucus and pus. Where necrosis is occurring or has occurred in the nose, it will be necessary to remove the diseased bone, before immunity from the odor can be expected. In some cases that can be easily done, as the necrotic process has progressed far enough to separate the dead from the healthy portion and a few incisions of the mucous membrane or other tissues will aid in removing the sequestrum.

In other cases it may be necessary to curette or saw, or drill away the offending mass.

After the necrotic tissue is removed, a thorough cleansing one to four times a day with any good alkaline solution, such as: Seiler's, Dobell's, or *Listerine,* alternated with *Peroxide of hydrogen* until all crusts and mucus are removed, followed by an oil spray of 5 per cent. of *Sanitas oil* in *Albolene* or *Glymol,* will, in a few days, remove the

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odor and put the parts in a condition to be treated locally for ulceration, or any other lesion that may exist, and greatly aid in restoring the parts to a healthy condition.

Empyema of the antrum has caused some of the worst cases of offensive breath which I have ever treated. This is caused by the accumulation and retention of mucus in the antrum until decomposition occurs; the secretion continuing, forcing the excess through the hiatus semilunaris into the nose, from which it is blown during the day, and drops back into the nasopharynx and larynx during sleep, to be hawked and coughed out during the early waking hours. One case of this kind had been under the care of a number of physicians for catarrh for ten years without benefit. The awful odor was soon relieved by draining the antrum through an opening made by passing a trocar under the lower turbinate into it and then washing the cavity out thoroughly with *Peroxide of hydrogen* and an alkaline solution, followed by *Carbolized oil* or *Camphophenique oil.*

Rhinitis atrophicans fetida, or atrophic rhinitis, is the most common of the destructive diseases of the nose, and next to syphilitic rhinitis, is the most offensive.

The proportion of cases of atrophic rhinitis to those of hypertrophic, according to Bosworth, is one to forty. The odor of atrophic rhinitis varies in intensity at different times in the same individual, and is much more pronounced in some than in others. It may not be, and usually is not, perceptible to the patient, owing to impairment of the sense of smell. The odor is not in proportion to the quantity of secretion, nor is it influenced much by its quality. Many different formulas for disinfectant and detergent sprays are on the market and each specialist has his favorite, but all have the same end in view; the removal of the fetid masses and consequently of the ozena.

This term ozena, is by many applied only to the odor due to syphilitic ulceration of the nose; others apply it only to the odor from atrophic rhinitis, while others consider it but a symptom of any disease of the nose with an odor.

Dr. Chas. Knight, of New York, says: "This much misused term signifies a bad odor, which is by no means pathognomonic of atrophy. It is met with in various other conditions, such as syphilis, malignant diseases, and in nasal obstruction from a foreign body, or from disease or deformity of the nasal fossæ. It is a symptom and in no sense a disease.

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To remove the ozena of atrophic rhinitis it is absolutely necessary to get and keep the nose clean. This is best done by a coarse spray of an alkaline solution, or a normal salt solution, to which has been added an ounce of glycerine to each pint, alternated with a spray or douche of peroxide. If the atrophic condition has invaded the naso-pharynx, I find the "Success" syringe the most satisfactory syringe for self-use. This is a soft rubber bulb, to which is attached a tube eight inches long, perforated an inch or two from the end with small holes. A patient can pass the long soft end through the nose into the pharynx and by pressing the bulb wash out the accumulated crusts and secretion with greater rapidity and thoroughness than by any other method; and with less danger to the ears than by the hard rubber post nasal syringe or ordinary douche. After a thorough cleansing, I find a spray of *Hydrastis oil,* or a spray containing 5 grains each of *Menthol* and *Salol* to the ounce of *Albolene* very efficacious, not only in removing the odor, but also in staying the progress of the disease. In case the ozena is not relieved by the above, the spray containing *Sanitas oil,* as recommended in syphilitic ulceration of nose, will probably prove satisfactory. The use of *Kali iod.* and *Iodine* in glycerine, also *Ichthyol* in 5 to 50 per cent. solution, is highly recommended by many old school authorities in atrophic rhinitis.

The most frequent nose or throat trouble which causes offensive breath is chronic follicular tonsillitis; a crypt of the tonsils often becomes filled with the exudation of the glands and is retained until it begins to decompose and is forced out by hawking and coughing or swallowing; this secretion is of a cheesy consistency as well as color, and is often as large as a half-split pea, and is of a fetid sickening odor. This condition is found mostly in persons from 15 to 30 years of age and in those who have been subject to attacks of tonsillitis. Many people have offensive breath from this cause without knowing its source, and even the physician will often fail to discover the cause, as oftentimes the crypts or the posterior pillars of the fauces entirely cover the exudation and it is not discovered unless a probe or curette is used to separate the pillar from the tonsil or open the mouths of the crypts. The removal of the tonsils, if enlarged, is the surest cure for such a condition. The next best is to slit the cypts with a tonsil knife and cauterize the walls with galvano-cautery, chromicor tri-chloracetic acid. A separation of the tonsils from the pillars will also be of benefit in preventing the lodgment of the exudation. Myles' lingual tonsillot-

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ome I have found useful in removing portions of small diseased tonsils that I could not remove by means of the ordinary tonsillotome.

Quay recommends a spray of *Peroxide,* with 25 pounds pressure from an air condenser, for cleaning out the cypts, followed by galvano-cautery. My experience in removing tonsils with the cold wire snare has not been satisfactory; found it too slow and painful.

There is another class of cases found among refined fastidious people, both male and female, who are particular regarding the teeth, picking and brushing them regularly, whose liver, stomach and bowels are seemingly normal and healthy, who have no atrophic rhinitis, do not smoke or imbibe, yet whose breath is as sickening and fetid as if due to atrophic rhinitis. This condition is frequently due to an ulcerated condition of the septum on which the mucus accumulates, dries and fermentation takes place under the scab, causing offensive odor, which is not relieved until the crust is blown, washed or picked off, to occur again in 24 to 48 hours; the removal of this crust is frequently the cause of epistaxis. A thorough spraying night and morning, followed by spray of *Calendula oil,* will help to cure the ulceration; if an old ulceration, gentle stimulating with *Arg. nit.,* pure, or *Com. tinct. benzoin,* applied to raw spot, will hasten the improvement.

Other cases are caused by an accumulation of mucus in nose or naso-pharynx, which soon begins to throw off an offensive catarrhal odor. A spray of *Listerine* solution, followed by an oil spray of *Menthol* and *Salot,* will greatly mitigate the odor from such a condition.

Where the odor is due to phthisis, either laryngeal or pulmonary, only a temporary relief from the odor can be expected from the treatment.

Offensive breath, due to smoking, drinking, or eating strong smelling food, can only be modified by use of *Sen Sen, Trix mint,* cardamon seed and the proverbial clove. Cleansing the teeth and rinsing the mouth with a strong solution of *Listerine, Borolyptol, Pasteurine,* etc., will remove much of the odor of stale tobacco after smoking.

Offensive breath, due to the neglect of the teeth, is very common. The teeth should be picked after each meal and cleansed with a brush and cold water at least once a day, preferably at night. If followed by rinsing the mouth with Phillip's Milk of Magnesia, the teeth will be preserved and the breath sweetened.

The odor caused by wearing false teeth plate can be removed by brushing the plate with a strong solution of bicarbonate of soda once a day, and once a week with pulverized pumice stone. If odor is due

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to decayed teeth, filling or removal of offending teeth, is necessary. Offensive breath, due to stomach trouble, is not in our line, but can be benefited by *Nux., Soda Bicarb.* and *Mercurius,* as indicated.

DISCUSSION.

Dr. Smith: This concise, comprehensive and practical paper of Dr. Haywood is deserving of hearty commendation and emulation. That his pen follows a "clinical nose" is proven by the clinical experience so broadly evident and the absence of pedantry, which, nowadays, is saying a great deal. I am entirely in accord with the theme and variation of the entire article. In addition to the many causes already noted by the essayist, I have encountered several that seem worth the mention.

Among children, I frequently find that foreign bodies within the nasal cavities are productive of offensive breath, which disagreeable symptom disappears with the removal of the obstruction and the use of appropriate antiseptic douches or sprays. Adenoid children are also among the victims of this unpleasant symptom, due, in great part, I believe, to the coated tongue and food fermentation occasioned by mouth breathing.

When all other measures fail in old chronic syphilitic cases, much benefit will be received by directing the patient to use a douche of *Bichloride of mercury.* In some cases, I have used even a 1-4000 solution.

In obstinate cases, I have found a formalin solution to be of value and believe a more general adoption of this medicament would be attended with gratifying results. Along in line with the antral cases mentioned by the essayist, I have now under my care two cases of frontal and one of sphenoidal empyema, in which the disagreeable breath is the principal symptom.

Personally I am a firm believer in the efficiency of internal medication, with especially such remedies as *Aurum met., Hepar sulphur, Kali iod., Kreosote, Hydrastis, Mercurius, Mercauro, Pulsatilla* and *Sulphur.*

I cannot close my remarks without again expressing my personal appreciation to the essayist for such a valuable paper and upon a subject most writers would scorn.

Dr. W. B. Kreider: When there are crypts in the tonsils we should remember *Psorinum* in the higher dilutions from the 30th to 200th. There are cases reported where recurrent tonsillitis has been entirely cured with this remedy; the offensive breath from retained secretion in the tonsils is very often removed by the use of *Psorinum.*

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THERAPEUTIC USES OF COLD AND HEAT IN THE TREATMENT OF DISEASES OF THE EYE.

By S. S. Kehr, M. D.,

Denver, Col.

THE use of cold and heat as applied in the treatment of disease is established beyond a question, and has received such a remarkable impetus during the last few years as to warrant a careful and intelligent investigation by every modern physician.

The use of these agents is not of recent date; they have had their advocates since the days of Hippocrates. If they are properly and judiciously applied, they will put out the raging fires of disease within.

Science progresses, and the medical treatment of the sick is also advancing along simpler, more hygienic lines and on more scientific principles. The profession is beginning to realize that plants and minerals are not the only agents given us by God to meet and combat that arch enemy—disease, and we should certainly not be doing our duty to our patients if we failed to make intelligent use of such valuable allies.

I would rather be without any other local application than without these valuable adjuncts in the treatment of eye diseases. The specialist, who does not bear in mind the value of cold and heat, is not properly equipped to treat diseases of this organ.

There is much difference of opinion as to when cold or when heat should be used. There is an old rule, but it cannot be accepted absolutely, that applications to the eye should be of such a temperature as is grateful to the patient. Much depends upon the individual. Cases apparently in the same condition, in one case cold benefits while in another heat benefits; and in cases where cold aggravates, heat is beneficial. There is no hard and fast rule by which cold and heat may be applied, although, I think, in a general way, cold should be used upon the eye for the first twelve or forty-eight hours to prevent or lessen the reaction after injury, and to combat acute inflammation in its early stages. It is contra-indicated when there is risk of sloughing of the cornea, or when it causes serious discomfort, and all other inflammation requires heat.

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Some cases reject all moist applications; they are apt to be such as have little or no secretion except tears by reflex irritation. On the other hand, when secretion is abundant, moist applications wash it away.

The temperature of the eye varies in health and disease, as does that of other organs of the body. Up to the present time, no instrument has been invented to detect the variations in temperature to an accurate degree. Cold and heat will raise or lower the temperature if applied under proper conditions. Cold lowers the temperature by contracting the blood-vessels, and heat raises the temperature by dilating them. Cold limits the exudation in infflammatory conditions; heat aids by absorbing exudation and promoting nourishment by stimulation. Continuous application of at least fifteen minutes to one-half hour, and two, three, four, six, and ten times a day, is necessary of either agent, to obtain therapeutic action.

Various methods and devices have been adopted to apply cold and heat to the eye. The moist, cold, is made by placing by the patient's head a block of ice upon which are laid three or four pieces of surgical lint, or small cloths. One of these is laid upon the closed lids for a minute or two, until it becomes a little warm, when it is replaced by another piece and laid back on the ice to cool again. Cold—dry—is advised, and is applied with ice bags or by continuous irrigation of ice water run through coils of rubber, tin tubing, or Leiter's coil. Hot—moist—applications should be applied at a temperature of from 100 degrees to 130 degrees Fahr. For continuous moist heat, a good application is a poultice of ground slippery elm bark and covered with oiled silk, but must not be continued too long, as it may produce an œdematous effusion and possibly ulceration of the cornea, or favor disastrous intra-ocular suppuration. Dry heat is most desirable; it is not only very grateful to the patient from its soothing effect, but is wonderful in its therapy. It possesses the advantage over moist applications from the fact that it is more constant, and that it does not so readily cool the parts. Dry heat can be obtained by means of a hot water bag, or hot water run through a Leiter's coil, or coil of rubber tubing, by a folded napkin, absorbent cotton thoroughly heated, hop, bran or herb pillow, or the Japanese hot box. Dr. Flavel B. Tiffany, of Kansas City, uses a pad containing a coil covered with felt, which is attached directly to the street lamp circuit and the heat brought up to the desired temperature and kept so indefinitely, or increased or lowered as desired.

The following are some of the conditions in which cold and heat are applicable in affections of the eye:

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In cases that are seen early of extravasation of blood in the loose tissue of the lids, due to traumatism, cold compresses of cooling lotions will diminish the amount of swelling and discoloration. After twenty-four or forty-eight hours, when the swelling has subsided and the discoloration has shown itself, it can be cut short by hot application.

Injuries and wounds of the lids, conjunctiva, sclera, cornea and the deeper structures of the eye require cold applications.

Hæmorrhage into the eye—hypæma—the result of rupture of blood-vessels, require hot fomentations.

Chronic granulations require frequent irrigation with cold solutions of boric acid, or a weak bichloride of mercury solution, unless there is corneal involvement, then hot compresses.

A stye may often be aborted by vigorous applications of hot water compresses or steam. In acute conjunctivitis, a cold compress is very agreeable; later, frequent bathing with hot water is more acceptable.

Purulent ophthalmia, first stage, where the lids are tense and secretion lacking, local applications of cold are more useful, best applied by compresses of lint taken from a block of ice; where corneal complications exist, or the corneal surface is covered with gray film, hot fomentations are better.

Croupous or diphtheritic conjunctivitis requires cold in the first stage; later, the hot compresses.

All high grades of inflammation require hot fomentations or dry heat.

Scleritis and episcleritis require heat in some form.

In iritis, either moist or dry heat, except the traumatic form, has always been considered by all authorities the only local application applicable. Recently Helfrich, (Trans. Hom. Med. Soc., State of N. Y., Vol. XXVI., p. 157, 1891), of New York, reported very satisfactory results in the use of cold application in cases of rheumatic iritis, where there was an unusual amount of conjunctivitis. Schenck also reports its use in cases of syphilitic iritis.

Cyclitis and glaucoma call for hot fomentations or dry heat.

Discussion.

Dr. Ralph I. Lloyd.—Dr. Kehr's paper covers the ground very well indeed, and there is but little for me to say. The conditions in which we use these agents are inflammatory in character and from a theoretical standpoint, cold should be applied early and heat in the later stages. These inflammatory processes are principally of traumatic or bacterial origin, or both combined. Germs require for their development a cer-

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tain degree of heat, in addition to moisture and a suitable ground to work upon.

By applying cold, we hinder the growth of these organisms. Cold also lessens the congestion and the exudate by constricting the blood-vessels.

After the exudate has appeared, the absorption can be accelerated by heat, which increases the flow of blood to the part.

No rule in medicine is fit for all cases; this is no exception, but will serve the majority. There is no need to dilate upon the results obtained by cold applications in traumatic conditions and purulent ophthalmias as it is now the recognized method of treatment.

In purulent ophthalmias, *we must watch the cornea* and substitute heat for the cold upon the slightest appearance of corneal haziness. This point can not be emphasized too strongly.

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THE THERAPEUTIC VALUE OF MUSIC.

BY EMMA L. BOICE-HAYES, M. D.,

Toledo, Ohio.

BY this we mean not only the healing value, but the prophylactic or preventive value in the treatment of disease, whether mental or physical.

The use of music in this sense may be divided into two classes,—that which is purely mechanical, and that which is emotional.

By the word music I do not mean noise.

Music is a succession of wave movements of equal vibrations, causing a sound which produces a pleasing effect on the ear; while noise is a succession of wave movements of unequal vibrations, producing a sound which is unpleasant to the ear. Musical sound produces a continuous sensation, the musical value of which can be determined, while noise is either a sound of too short a duration to be determined, or it is a mixture of discordant sounds.

The auditory apparatus is especially constructed to receive these wave movements, and transmit them to the brain as sound. If the vibrations are less than 16 per second, separate shocks are perceived; if more than 38,000 per second, personal consciousness of sound ceases.

In treatment of middle ear diseases, advantage is taken of these vibrations in the construction of different machines. At first the succession of noises produced an effect,—but as noise cannot be measured and adapted to the patient, it in many cases produced more harm than good. In adopting musical tones, and trying to find the keynote in the individual, a great step in advance has been made. When this keynote has been found accurately, we can scientifically prescribe music, until then we simply give a "shot gun" prescription; it may hit, and it may not, and the treatment resolves itself into an irregular massage.

A Mrs. Hughes, a Welsh woman, has shown some interesting experiments with the Phoneidoscope illustrating the effect of vibrations on a thin diaphragm covered with a fine powder. The different tones produced figures of flowers, landscapes, sea shells, according to the vibrations, whether simple or complex. The same

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tone or tones always producing the same picture. A noise or discordant sound produces simply a formless mass incapable of reproduction. Therefore the inference to be drawn in aural massage is, that music and musical tones alone should be used to attain the best results.

Another mechanical value is that derived from singing. Every bodily organ is benefited by this exercise. Singers exercise their lungs more than others and we find that they have the strongest and soundest ones. The average German takes into his lungs about 3,000 cubic centimetres of air at a breath, while professional singers take in 4,000 to 5,000.

A singer not only supplies his lungs with more oxygen than other persons, but he subjects the muscles of his breathing apparatus to a course of most beneficial gymnastic exercise. As we are seeking something of this sort in prevention of tuberculosis, why not when it is in its incipiency advise vocal lessons? One may say that the breathing exercises often given are equally good, but the patient is deprived of the benefit derived from the emotional part of the music as well as from the effect of the vibrations.

Binet & Courtier, of France, have shown that musical tones, by virtue of regular vibration alone, quicken the circulation and respiration. Tests on dogs show that music increased the elimination of carbonic acid by 16.7 per cent. and the consumption of oxygen by 20.1 per cent. It also increased the functional activity of the skin.

An Italian physiologist studied the effect of music in one of his patients whose brain lay bare (from accident). He found that music actually enlarged the brain. The effect on the cerebral function was such that sometimes the vessels were restricted, and sometimes dilated.

Herbert Spencer asserts that music has the effect of massage on the nervous system.

Grecian mythology enshrines the early observations of men as to the power of music. Orpheus "played and drew rocks and trees after him." Apollo played his lyre at the building of Troy and charmed blocks of stones, which moved themselves into place. All this,—and more, simply means that the ancients recognized the moving power of music.

We are prone to consider music valueless as a remedial agent, or if considered at all, at least harmless. But in this age of advancement we must look more deeply into the subject.

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Nervous diseases are the curse of the human family and the victim is left to suffer all sorts of noises (under the guise of music) with the impression that it does not interfere at all with his recovery or that it must soothe. We are all familiar with the lines, "Music hath charms to soothe a savage beast, to soften rocks or bend the knotted oak," and are inclined to ascribe almost miraculous power and good to the influence of music. Poets sing of it, sculptors carve in marble their views of its influence, and they are all good. But are they?

I will illustrate. A musical friend was improvising on his violin, when he noticed a mouse running about the room, evidently attracted by the music. He played faster and faster, and the mouse ran more rapidly around the room. He changed to a slower air; the mouse moved more slowly and in smaller circles; he then changed to a minor key and played a plaintive air; the mouse went slower and slower, staggered, and finally crawled to the feet of the musician and lay there inanimate. The musician stopped playing, picked up the mouse and found him cold and stiff. He then placed the mouse under a bell glass in the sun; in a few minutes the mouse was as lively as ever. The musician then let him out, when he disappeared.

A repetition of the music and the mouse again came out. The musician claims that the effect was not purely emotional, but that of vibration. In proof of which, he gave me some powerful examples of the far-reaching effects of vibration or musical sound when in attune with another object.

Two tuning forks, tuned to exactly the same key, mounted on a resonant base, were separated about 50 feet, one being left free in the air, the other placed in a trunk with the lid closed; the door of the room was also closed. A violin bow was drawn across the free fork, bringing forth its tone. This tone could not be heard by the bystanders who were in the room with the fork enclosed in the trunk; but suddenly the fork in the trunk gave forth a note in response to the call of its companion. This experiment was perfected by Mayer, of Paris.

This experiment in a rougher manner may be made with violin and piano. Hold one key of the piano down so that the string is free to vibrate, then sound the same note on the violin, and the note on the piano will plainly be heard.

Dr. Audsley, of New York, is experimenting along these same lines and shows some delicate tests illustrating the power of vibration when too delicate to be appreciated by the human ear; but which

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instruments are capable of demonstrating; but the scope of my paper will not permit of description.

I have frequently noticed the effect of vibrations on a deaf person. A lady, stone deaf for 25 years, will be sitting quietly sewing, when some one will commence playing the piano in the next room. She will in a few minutes become restless, and then begin to talk, and finally ask if any one is playing on the piano. This would indicate that hearing is not necessary for the effect.

Dr. J. Leonard Corning, of New Jersey, in Medical Record of January 21, 1899, has given an account of most interesting experiments along the line of vibrations from music in the human body. He claims that the part which the emotions play in the effect of music is a small one. His experiments have been made on patients when asleep, with most beneficial effects in neurasthenia, insomnia and kindred diseases. The article is a long one, but being of such recent date anyone interested can easily procure it.

The British Medical Journal states that Mr. Gladstone found almost his only relief from intense neuralgia, from which he suffered during his last illness, in music. Herbert Spencer is said to have had recourse to music for relief of nervous disturbance. The Empress of Austria is reported to have been cured of neuralgia by certain strains of music repeated at intervals.

We all are familiar with our lullabys as soporifics for babies. I have heard the theory of hypnotism advanced with regard to lullabys. Have also heard the definition "that a lullaby is music of such a character that a child will sleep rather than listen to it." But we all know that when we have sung, and sung until our music becomes a noise, that baby will sleep, whether from the soothing effect of music, hypnotism, or in self-defense, I am unable to say.

With regard to the benefit in mental diseases from music, authorities differ, some claiming all good from its effects, others discriminating. One says: "It is good when it can be listened to and appreciated without any unpleasant reaction." What these reactions may be, will depend on the predisposing weakness of the patient. In all acute mental conditions music is contra-indicated.

Another says: "Music is by no means to be regarded as a harmless form of mental treatment."

When we consider the effect of the rapid vibrations in increasing the circulation, the slower ones in reducing it, we are able to see why a victim of melancholia should not listen to strains of music in minor

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keys; also, why anyone excitable and nervous should not listen to a martial strain and quick joyous music.

The vibratory effect is recognized by military men. While the troops are wearily plodding, almost unable to take another step, what occurs when the band strikes up a lively air? The circulation immediately becomes more active, deeper breaths are taken, the step is quicker, the back straightens and the men would scarcely be recognized as the same weary stragglers. After a battle the bands play music of a different character, when the men are excited after a day's fight it is more soothing and gentle, the same refrain often repeated to quiet and cheer.

The Belgian Minister of War ordered 25,000 books of patriotic and military songs for distribution among men in infantry regiments. A similar experiment in France shows that the number of stragglers has been reduced by 70 per cent. owing to the singing.

Harry W. Stratton, in Boston Transcript, gives a most interesting article on this subject from which I have just quoted.

In my treatment of the blind, I have just advised them to learn to play the violin, with most beneficial results, not as to the restoration of vision, but the mental effect in accepting the situation.

In Aural diseases we all know the effect of rapid vibrations on the ear in the increased redness, heat and mobility. And while the study of music in treatment of diseases is in its incipiency, and it may also be a sort of a "fad," is it not worth consideration?

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THE PATHOGENETIC AND THERAPEUTIC ACTION OF MERCURY UPON THE NOSE AND THROAT.

BY S. H. VEHSLAGE, M. D.,

New York.

Pathogenetic Effects.—Metallic Mercury, when in prolonged contact with the skin, will be followed by the constitutional action of the drug. When swallowed, it is purgative by virtue of its weight; when it is retained in the intestinal canal it will form soluble combinations, enter the blood (where it probably exists as an albuminate) and produce characteristic systemic effects. Mercury is slowly volatile at the ordinary temperature of the air, and, as a vapor, is readily absorbed by the pulmonary mucous membrane. The effects of inhaling the vapor have been observed especially in those engaged in mining and smelting the ores of Mercury, and among those employed in the mechanical arts—as gilders and others—the workmen being constantly impregnated with it. The fumes of the metal cause wasting, ptyalism, necrosis of bones, impaired intellect, and, in women, abortion. In some cases obscure nervous phenomena may result—such as loss of memory, defects of coordination, disorders of sensation, convulsions, and dementia.

The pathogenetic action of Mercury is manifest when there is a continued absorption of the drug in sufficient amount, either because of excessive size of dose or of undue frequency of administration, or if elimination is interfered with, or if an idiosyncrasy of the individual exists. The ready absorption of Mercury, when in a state of minute subdivision, may be attributed to the increased susceptibility of the metal in this form, to oxidation, or, to the solvent action of the fluids of the body.

The earliest of the pathogenetic symptoms are a disagreeable metallic taste in the mouth, an unpleasant odor of the breath, and some slight swelling and soreness of the gums and teeth, elicited upon firmly closing the jaws. A persistence in its employment causes an aggravation of the symptoms already observed, and the well-known characteristics of the drug become manifest. The saliva is enormous in amount, as well as thickened, and runs from the mouth continually; the tongue is increased in size—it may be very greatly—and is covered

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with a very thick yellowish-white fur, and readily takes the imprint of the teeth at its edges; the gums are painful to the touch and greatly swollen, and bleed easily; the teeth become discolored, carious, and fall out; the entire cavity of the mouth is congested and sensitive, and there is more or less swelling and tenderness of the submaxillary, lingual, parotid, and tonsillar glands, and the lymphatic glands on the neck; the patient can not open his jaws, and is utterly unable to articulate. There may occur, also, ulceration of the gums, cheeks, and tongue, gangrene of the soft palate, hæmorrhage, and necrosis of the alveolar processes. These symptoms vary with individual susceptibility. Adults salivate much more readily than do children. Some individuals are salivated by very small quantities, while others are tolerant of large doses of the drug. The scrofulous are very seriously affected by Mercury.

With the earlier symptoms of mercurial poisoning there may be noticed a great irritability with inclination to quarrelsomeness and passionate outbursts; or excessive apathy, indifference, and weariness of life with longing for death. The pulse-rate will be increased, and there is some rise in temperature, the fever being rather hectic in character. In the severer cases nutrition suffers considerably, emaciation and anæmia may become extreme, and death result from exhaustion.

The nasal bones are painful, and there is an inflammatory redness and swelling of the skin and subcutaneous tissue. Fluent coryza; frequent and violent sneezing; the hyperæmia and exudation into the mucous and submucous tissue causes a turgid condition of the nasal cavity; there is ulceration in the nasal fossæ, with very offensive secretion; epistaxis, with thick, rapidly-coagulating blood. The mucous membrane of the soft palate and pharynx is bright red in color, vesicles, pustules, and ulcers being frequently found in the palate. The uvula and tonsils are swollen, and there is more or less dysphagia, and exudation of slimy and albuminous masses with forms of transition to croupous exudation. Bronchial catarrh, violent attacks of rough, hollow cough, accompanied with a slimy, foamy, and bloody expectoration.

It has been demonstrated that Mercury, like Iron and Manganese, will act as a *tonic,* increasing the weight and vigor of the body, and improve the quality of the blood by causing a greater production of red corpuscles, provided it is administered in small doses and not too frequently repeated. It remains true, however, that the prolonged administration of Mercury in considerable doses results in the diminu-

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tion of the number of red blood-cells, an increase of the watery constituents of the blood, and a lessening of its plasticity from diminution of its albuminous and fibrinous constituents. Moreover, there then accumulate in the blood a number of effete materials whose composition is unknown, but whose nature is fatty. Consequently there is a marked degree of anæmia, loss of flesh, muscular weakness, præcordial distress especially at night, nervous irritability, jerking of the limbs, trembling of the hands, exhaustion, and finally paralysis.

Mercury remains a long time in the body, and may accumulate, it is said, in globules in the cancellous structures of bone. Mercury has been found in every tissue; it interferes with the natural nutrient processes, and may be excreted by almost every channel. Except in chronic cases of poisoning with Mercury, or when mercurialization is combined with other poisons—as syphilis and scrofula—its effects may be readily displaced by either *Hepar sulphuris, Nitric acid, Kali iodatum, Aurum, Asafoetida, Staphysagria, Iodum, Mezereum,* or *Stillingia.*

Effects of the Different Preparations.—All the compounds of Mercury are more or less poisonous, but one of the most active is the *Corrosive Sublimate* (Mercuric Chloride). This salt, even in very small doses of the concentrated form, is a violent irritant and corrosive, causing the most intense inflammations, especially in the domain of the muco-membranous system, the toxic symptoms appearing in a few minutes after the ingestion of the poison. When a poisonous dose of Corrosive Sublimate has been swallowed, the mucous membrane of the mouth and throat presents a whitish, corroded appearance, as if it had been washed over with a strong solution of the nitrate of silver. A sense of contraction of the muscles of the throat and an acrid metallic taste are experienced. There are burning pains in the mouth, throat, œsophagus, and stomach. Vomiting soon follows, the vomited matters consisting at first of the contents of the stomach, afterward of mucus streaked with blood, and sometimes shreds of mucous membrane. Besides the white, corroded, and swollen condition of the lips, tongue, and mucous membrane of the mouth and pharynx, and the evidences of violent gastro-intestinal irritation, there are at times manifestations of inflammation in the larynx, trachea, and bronchi. Swallowing may be difficult or even impossible, and respiration impeded. Death may be preceded by syncope, coma, or convulsions.

Mercurius cyanatus (Mercuric cyanide) is a very violently acting preparation, which, aside from its corrosive character, exerts a specific

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nerve-paralyzing influence upon the organic functions, in consequence of the hydrocyanic acid contained in it. "Poisoning by this drug presents a picture of malignant diphtheria accompanied by ulceration. There is frequent and profuse epistaxis. The lips, tongue, and inside of the cheeks are covered with a grayish-white coating. The gums are swollen and covered with a white adherent layer, under which is found a violet border. The tongue is pale, with a yellowish streak on the base; swollen, with red edges. A white opaline layer forms on the columns of the velum palati and tonsils. Pharynx is red and looks rough; dysphagia. A pseudo-membranous formation extends all over the fauces and down the throat. Inflammation of the whole buccal cavity, with salivation, fetid breath, and great pain on swallowing."—HALE.

Cinnabaris (Cinnabar; Red Mercuric sulphide). This salt, in fine powder, constitutes the pigment *vermilion.* Cinnabar is very insoluble, and formerly it was employed to mercurialize by the procedure of throwing about thirty grains on hot coals and subjecting the patient's body to fumigation by the products of the combustion. Fumigation by Mercuric sulphide, by reason of the irritant nature of the sulphur dioxide evolved, has given place to fumigation by the subliming of Calomel.

Mercurius dulcis (Mercurous chloride; sub-chloride of Mercury; Mercurius mite; Calomel). Calomel is one of the most insoluble of the preparations of Mercury which are used medicinally; yet a number of cases are recorded in which severe constitutional symptoms, and even death, have resulted from comparatively small doses. Because of its insolubility, it probably escapes solution and combination in the stomach, and is decomposed by the alkaline secretions in the intestines, the oxide of Mercury being precipitated. The symptoms which are observed in cases of poisoning by calomel differ greatly according to whether the drug is taken in single full dose, or in small repeated doses continued for several days. In some cases they resemble those produced by corrosive sublimate; in others the constitutional effects are more prominent. It is probable that its solution and absorption is not always effected in the same way. When conversion and absorption take place very rapidly, symptoms of poisoning may result. In some cases, these effects of the drug are due to an idiosyncrasy.

Mercurius iodatus ruber (Mercuric iodide; the red iodide of Mercury). The physiological properties of this preparation are prac-

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tically identical with those of the Corrosive Chloride—of an intense irritant action even to corrosiveness.

Mercurius iodatus flavus (Mercurous iodide; the green iodide of Mercury) is closely similar, in action, to that of Calomel.

Therapy.—*Mercurius vivus* (metallic quicksilver) and *Mercurius solubilis,* Hahnemanni (which is the precipitated black oxide of Mercury, and contains some ammonia and some nitric acid) have not been separated symptomatically, though both are practically identical.

Under Mercurius vivus is noted swelling of the nasal bones, with painful sensibility on being touched. Inflammatory swelling, and shining redness of the nose. Frequent and profuse nosebleed during sleep. Fluent coryza, with copious discharge of excoriating mucus; frequent sneezing. Offensive smell from the nose; scabs in the nostrils.

There may be a sense of dryness in the mouth and throat, or accumulation of tenacious mucus. There is a putrid smell from the mouth, and profuse discharge of exceedingly fetid saliva, has a metallic taste, and which is sometimes also sanguineous. The tongue is moist, swollen, flabby, showing imprints of teeth on margins, and coated with thick white mucus. Inflammation and superficial ulceration of the mucous membranes of the mouth. The gums are livid, swollen, fungous, very sensitive, and bleed easily. Retraction and swelling of the gums, with sensation of excoriation on touching them and when eating. Ulceration of the gums. The teeth become black, carious, loosen, and fall out. The uvula is swollen and elongated. Inflammatory swelling and redness, with painful dryness of the mouth and of the throat. Angina, throat and fauces of a coppery red color, and swollen. Suppuration of tonsils, with sharp sticking pain in fauces when swallowing. Swelling of the submaxillary and lymphatic glands, with hardness. Hoarse, rough voice; burning rawness of larynx. Useful in chronic inflammatory conditions of the larynx, trachea, and bronchi, and in all forms of sore throat where there is free salivation, swelling of the glands, and offensive breath.

Mercurius corrosivus is especially useful in acute diseases of an inflammatory character, connected with tumultuous, violent, and dangerous processes—such as intense inflammations of the palatal, pharyngeal, and laryngeal mucous membranes, with participation of the submucous tissue, especially if copious exudative processes are associated therewith. The uvula is swollen, elongated, and very dark red. There is in-

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tense burning pain in the throat, which is rendered intolerable by any external pressure.

Of the various mercurial preparations Mercurius corrosivus is perhaps not used as frequently as it might be, to advantage, especially in syphilis. While it is useful in fluent coryza, with frequent nosebleed and rawness and smarting in the nostrils, the discharge being acrid and corroding the tissues over which they flow, the remedy is particularly indicated when the accumulation in the nose is quite thick—in fact, almost like glue. Ulcers in the nostrils, with tendency to perforation of the septum. Gums swollen and spongy; bleed easily. Tongue coated with thick white mucus, or dry and red; excessively swollen. Teeth loose; pain and fall out. Soft palate and uvula are swollen and dark red; tonsils are swollen and covered with ulcers. Throat is intensely inflamed and swollen, preventing swallowing and threatening suffocation. Violent burning pain in throat and œsophagus, excessive sensitiveness of the glands, aggravated by slightest external pressure. Inflammation of the larynx; hoarseness or aphonia; burning, cutting, and stinging in the larynx, trachea, and epiglottis, especially on swallowing food. Difficult respiration. Cough, with expectoration of mucus tinged with blood.

Mercurius cyanatus is one of the very best remedies in diphtheria, especially when it is of a malignant type. There is frequent and profuse epistaxis. The false membrane, which at first is white, becomes dirty gray in color and leathery in character, threatening even to grow gangrenous; the nasal cavities, fauces, and pharynx being covered with it. The patient is prostrated from the beginning; weakness is extreme. There is anorexia; tongue is coated brown, or even black; there is an incessant flow of saliva, and the breath is fetid. Useful in laryngeal diphtheria; harsh, barking, croupy cough, expectoration is thick and ropy; great dyspnœa.

Cinnabaris is indicated in nasal catarrh, subacute or chronic, when there is great pressure about the root of the nose, as from a heavy pair of spectacles. Considerable accumulation of stringy mucus in the posterior nares. The throat is swollen and the tonsils are enlarged and redder than normal. Great dryness in the throat, which is more annoying at night, waking the patient from sleep. Œdema of epiglottis. Irritation of larynx, and hoarseness.

Mercurius dulcis is applicable to catarrhal conditions of the mucous membranes in general when presenting the characteristic mercurial symptoms. It is indicated in scrofulous children who are pale, and

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who have swelling of the cervical and other glands. The remedy is used principally in catarrhal conditions of the Eustachian tube, with deafness and tinnitus aurium.

The *Iodides of Mercury* act especially upon the glands and mucous membrane of the throat, after the manner of other mercurials, though partaking somewhat of the action of Iodine. In Mercurius Iodatus Ruber this latter action preponderates, and there is apt to be more febrile excitement and tendency to headache, while the action of Mercurius Iodatus Flavus more closely resembles that of Mercury.

Mercurius iodatus ruber.—"Cold in the head." Nose hot, swollen; much sneezing and discharge from the nose; swelling of the turbinated bodies. Profuse flow of saliva from the mouth; lips slimy and sticky on waking. Much phlegm in throat. Sensation of a lump in the throat, with disposition to hawk it out. Painful swelling of tonsils and submaxillary glands. Dysphagia; the simple attempt to swallow saliva excites more pain than does the swallowing of food. Superficial ulcers in the throat. Dark redness in the throat; the glands of the neck are swollen. Sharp, sticking pains in the throat, mostly on *left* side. Applicable to tonsillitis—simple catarrhal or lacunar—even to suppuration, and to genuine diphtheria and diphtheritic laryngitis, preferably on *left* side. Complete aphonia. Subacute processes arising from the influence of cold or atmospheric variations.

Mercurius iodatus flavus is useful in chronic catarrhal conditions, with doughy tongue, the base of which is covered with a thick, dirty yellow coating, tip and edges being red, especially on rising in the morning. Much tenacious mucus in the throat; hawking causes gagging. Mucus hawked up with difficulty. Burning in throat. Fauces and pharynx red and inflamed; tonsils swollen, especially the *right*, with swelling of the glands in the neck. Pain on swallowing; sensation of a lump in the throat. Posterior wall of pharynx is dotted with patches of mucus and small spots which look ulcerated. Loss of voice; hoarseness. Very often indicated in diphtheria.

The writer is indebted to the authors of the standard works on Materia Medica for reference.

DISCUSSION.

Dr. Geo. H. Quay: The main objection to the paper to which we have just listened is, that it covers the pathogenetic, and to a great extent the therapeutic action of the Mercurials on the nose and throat, so fully that it leaves no room for criticism.

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The pathogenetic action of mercury on the tissues under discussion I will pass over, and briefly refer to its therapeutic indications. The mercurials are frequently indicated in nose and throat lesions.

Under *Mercurius viv.*, or *sol.*, perhaps the most often used, we find a watery, fluent coryza, excoriating discharge and sneezing; later the discharge becomes greenish, and may be accompanied or followed by redness and swelling of the nose. The gums are swollen and spongy; the teeth decay early, reminding us of *Kreosote,* and *Staphisagria;* the gums are painful; the patient cannot bite the teeth hard together,—they feel elongated. The tongue is flabby, swollen on the border, showing the imprint of the teeth; with this moist condition there is usually thirst. We are all familiar with the well known aggravation at night, when warm in bed, and especially worse when sweating.

There is one point that I desire particularly to bring out; we frequently have patients complaining of neuralgic pains in the face at night, or of a catarrhal condition in the throat, with a metallic or coppery taste; or again it may be a chronic condition of one or more of the accessory sinuses. When such conditions occur in a patient with amalgam fillings in the teeth, *you cannot expect to cure your case until the fillings are removed.*

I know that many dentists are skeptical on this point, but from repeated observations, I know it to be a fact. Again I repeat when such conditions fail to yield to the indicated remedy, and that remedy is usually mercury, do not fail to have the amalgam fillings removed.

Mercurius corrosivus has been used by me, especially, in certain manifestations of syphilis, in the later part of the secondary and during the tertiary stage, when the disease takes on a virulent form, that is,—there is rapid destruction of tissue, there may or may not be a very corrosive discharge; the external cartilage of the nose, or the soft tissues of the mouth are being rapidly destroyed. In such cases *Mercurius corrosivus* the 3x or 4x will quickly stay the progress of the disease, not infrequently within forty-eight hours.

Just here, let me say, that after a somewhat extended experience in the treatment of the disease, I believe that mercury in some of its preparations,—and the iodide of potash, are the main remedies in the acquired form of syphilis, but when we have to do with a patient who has inherited syphilis, whether their symptoms are indication of syphilis, tonsilitis, or any other pathological process, in such cases mercury is usually harmful, and will aggravate the existing conditions, even though it is apparently called for by the presenting symptoms; at least such has been my observation.

Again, under corrosive mercury the mouth is usually dry with great thirst, whereas under the vivus the mouth is usually moist. Corrosivus is more apt to have a bloody saliva, with this there may be an excoriated raw condition of the buccal cavity, or there may be aphthæ of the cavity, but in all conditions not specific the parts burn or feel scalded.

The biniodide I have used more especially when the glandular struct-

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ures are involved; sensation of a lump in the throat; this also occurs under *Phytolacca,* but the throat then has a dusky-red appearance. The biniodide usually has a dry, scalded tongue; the patient desires to wet the tongue to relieve the sense of dryness. In tonsillar hypertrophy, especially of the left side, the tonsil is apt to be divided by a cleft,—it is not the large, smooth tonsil of *Belladonna.* Judging from my own experience and from observation, I believe this preparation when prescribed in acute tonsillitis is usually given too low, and too frequently repeated; it will tend to prolong the condition, unless given moderately high and not oftener than two or three times a day.

The *Protoiodide* of *Mercury* tongue is yellow, about the color of the 3x trituration of the drug. When this preparation is indicated the diseased condition is farther advanced than under the biniodide. There may be ulcers on the posterior wall of the pharynx; slight pressure may bring the mucous membrane off. I have often had excellent results with this preparation in membraneous croup. A few doses of the 2x trituration, frequently repeated, has a wonderful solvent action on the membrane.

Dr. W. R. King: The author of this complete and scholarly paper has left practically nothing to discuss that has not been ably brought out by the previous discussor, Dr. Quay. I can only add a few words covering a unique experience with three cases of involuntary mercurial poisoning chronic in nature.

Some fifteen years ago one of our general practitioners presented to me for diagnosis, consultation and advice a gentleman from Chicago who had been the rounds of both schools of medicine, seeking relief from a severe throat trouble. This he had failed to receive and the doctor in question had about given up. There was dysphagia from a paralyzed condition of the pharyngeal muscles. The mucous membrane of the mouth and throat presented many small ulcers of a bluish-white color, simulating the true mucous patch; salivation was marked and excessive. Positive non-syphilitic history existed and he had taken no mercurials at least for a long time. I was puzzled at first, but during my examination I noticed a rubber plate in the top of his mouth which was rough and dirty looking. I asked to examine this and was soon convinced that this plate contained free mercury, which was slowly escaping through numerous holes left from imperfect vulcanization.

He was sent to a prominent chemist at the Smithsonian Institute to have an analysis made of the plate and the report came back that free cinnabar was most plentiful in the plates and doubtless escaping gradually. A metal plate (gold) was ordered and steady, but slow, improvement occurred and continued until his death from apoplexy about a year and a half later.

About twelve years ago a lady, married, mother of two healthy children, was sent to me for a stubborn and chronic ulceration of the uvula and soft palate. This was destructive in nature and resisted all treatment until the soft parts were almost totally destroyed. We were both desper-

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ate. The family history was perfect; the husband clean and healthy. It was not syphilis. Every test imaginable was made to discover tuberculous characteristics; these were negative. I was in despair until on one occasion when I examined and treated her throat she had neglected to take out a large rubber plate which was in her mouth. This she had invariably done before, and she was quite chagrined when she found I was interested in it, and asked to see it. My suspicions were at once aroused, as the plate was rough, porous and dark in color. It had been made by a dentist in a small Ohio town. This plate was analyzed by the same chemist, and a like report was returned as in the first case. A gold plate was secured to take the place of the old one, and she made a gradual but extremely satisfactory recovery; a portion of the soft palate was restored through gradual proliferation of new tissue.

The third and last experience occurred about four years ago in a lady about sixty years old, who complained of many ulcers in throat and mouth, and on the tongue, bluish-white, sore patches, considerable salivation and general local discomfort. She had been treated by several old school physicians for gastric troubles as a cause of this supposed stomatitis. With the former cases in my mind, and discovering the same kind of upper plate, clumsy, rough, porous and dirty, I immediately ordered a careful analysis and received a report that a great excess of free red sulphide of mercury existed, "enough to poison a horse," as expressed by the chemist. The substitution of a metal, non-mercuric plate in this case was followed by complete eventual recovery. This patient is still under my observation, owing to an eye trouble which I am now treating.

These cases represent what is now effete dentistry, yet I have no doubt ignorant, unthinking or unprincipled dentists may still be inflicting similar plates upon patients desiring cheap work, thus affording cases of slow mercurial poisoning, which at any time may require our professional attention.

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THE PATHOGENIC AND THERAPEUTIC ACTION OF RHUS TOXICODENDRON UPON THE EYE.

BY CHAS. DEADY, M. D.,

New York.

IN the collection of provings of *Rhus toxicodendron* made by Samuel Hahnemann, and published in Vol. II of the Materia Medica Pura, the number of symptoms relating to the eye and its neighborhood is so large as to lead to the supposition that *if the theory of homoeopathy* be a correct one, this drug should prove of special value in the treatment of diseases of the visual organs. Never did an hypothesis receive better support when reduced to practice; and if the efficacy of the law of similia similibus curentur were compelled to rest upon a single test to demonstrate its truth, few better selections could be made than that of *Rhus tox.* in the department of ophthalmology.

Many of the symptoms contained in the Materia Medica Pura are indefinite, and the great majority of them point to apparently superficial diseases; but when we consider the fact that at the time these provings were made, the science of ophthalmology, as understood at the present day, actually had no existence, that the principle of the ophthalmoscope had not yet been discovered, and that the methods of precision in the examination and diagnosis of diseases of the eye now available were at that time unknown, this is little to be wondered at; and we are compelled to admire the industry and energy of the men, some of them of our own day and generation, whose tireless labor has sifted and arranged the numerous symptoms of this and other drugs, and indicated the method of their proper application to the various pathological processes.

When the New York Ophthalmic Hospital was placed in charge of the adherents of the homœopathic school, they were confronted by the fact that no definite materia medica of diseases of the eye and ear, as such, was in existence, and in order to ascertain the remedy for a given case of disease they were obliged to take the conditions throughout the body, and by comparing these with the general materia medica find a suitable drug for the totality of the symptoms. Had they been content with simply curing their cases in this routine way, little would have been gained, but they made it a rule to take down the special eye or ear

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symptoms in each case with great care, and when a drug had cured a certain case of disease the eye or ear symptoms which had disappeared under its use were carefully noted. With a multiplicity of cases, and a systematic verification of symptoms, a valuable special materia medica of these diseases was compiled and the curative properties of drugs in the various pathological entities of the eye and ear was definitely demonstrated and their characteristic symptoms for each disease mapped out.

Under this methodical procedure the relative value of drugs apparently indicated in these diseases gradually became better known; some although presenting many and varied symptoms were found by experience to be superficial and evanescent in their action; while others proved of the greatest efficacy in the most serious lesions and became indispensable in the armamentarium of the physicians of the hospital staff.

In the latter group *Rhus tox.* speedily assumed prominence as a drug of special value in ocular disease, and this was enhanced by such a large measure of success in its application over a wide range of affections that it came to be regarded (at least in this hospital) as a veritable sheet anchor in ophthalmological work, and as time passed, it was used more or less in almost all the acute diseases to which the eye and its adnexa are subject.

A prominent symptom of *Rhus* is great swelling of the eyelids. This it has in common with a number of other remedies, but differentiation becomes less difficult when we remember that *Rhus* is especially indicated when swelling and œdema of the lids are the result of the deeper and more serious lesions. After the operation for cataract, one of the first symptoms indicating danger is œdematous swelling of the lids, and no drug in the materia medica compares with *Rhus* for ensuring the safety of the eye. When the pathological process advances, even to the appearance of pus within the eyeball, still we may confidently rely on this remedy which has cured many such cases when they were apparently hopeless. In all post-operative complications it is of the greatest value, and too much emphasis cannot be placed upon this statement.

When a sound eye takes on sympathetic irritation from its diseased fellow, the fact is first manifested by a certain amount of swelling of the lids and more or less profuse lachrymation, the latter another valuable indication for *Rhus tox.* In this condition I have personally used it many times with complete success, and it is the first drug to be thought of in this extremely dangerous complication.

It is a well-known fact that *Rhus* is particularly applicable in rheumatic conditions, especially where these are resultant upon a wetting

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or exposure to dampness. This, together with its nightly aggravation, points to another sphere of usefulness in rheumatic iritis, where it will prove all-sufficient when the characteristic symptoms exist.

In suppurative iritis and cyclitis it is very serviceable no matter what the cause.

The symptom, "while he turns the eye or it is pressed, the eyeball is painful, can hardly move it," indicates its use in acute retrobulbar neuritis, which causes this symptom exactly and is well known to be frequently due to a rheumatic diathesis. The same symptoms may call for this drug in tenonitis, in which the stiffness, difficulty of, and pain on, moving the eye are specially prominent and which has swelling and œdema of the upper lid, chemosis of the conjunctiva and protrusion of the eyeball, all symptoms of *Rhus tox.*

The idiopathic form of this disease is almost always rheumatic or gouty in origin, furnishing still another indication for the remedy.

In orbital cellulitis we have swelling of the lids, chemosis, protrusion of the eyeball, almost complete abolition of motion with pain on the attempt, and also, on pressure, aching in and around the eye with the probable formation of pus in the deeper structures. All conditions curable by *Rhus tox.*, which is one of the best remedies for this disease whatever may be its origin, traumatic or otherwise—and has cured many of the most desperate cases.

In panophthalmitis, or suppurative inflammation of the eyeball, we find the swollen lids, difficulty of, and pain on motion; chemosis of the conjunctiva, severe pain in the eyeball, lachrymation, etc., again indicating the remedy. *Rhus tox.* is one of the few drugs that have cured this most fatal of lesions, and its success in restoring the integrity of the eye in some cases where this result has seemed almost impossible is a matter of record.

The symptom, "heaviness and stiffness of eyelids, like paralysis, as if difficult to move eyelids," would seem to indicate its use in ptosis, and this condition, as well as paralysis of certain of the ocular muscles, is curable by *Rhus tox.*, especially if due to wetting or dampness. Such cures have been made frequently in the clinics of the Ophthalmic Hospital.

Erysipelas of the eyelids often presents the characteristic symptoms of *Rhus.* Of course, the swelling of the lids is always present, but many of these cases have in addition the chemosis, hot lachrymation, the characteristic pains and aggravation, restlessness, vesicular eruptions, etc., and it is a valuable and efficient remedy where these exist.

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Although *Rhus tox.* is especially useful in the most serious inflammations of the deeper and more important structures of the eyeball and surrounding tissues, its sphere is not confined to these conditions alone, but seems to cover almost all the acute diseases to which the visual organs are subject.

Given a rheumatic origin, especially if it be from exposure to damp or wet weather, with profuse lachrymation, pain in and about the eye, a tendency to chemosis of the conjunctiva, œdema of the lids, photophobia and the characteristic aggravation and restlessness at night and this valuable drug will rarely be found wanting in any of the inflammations of the conjunctiva, cornea or lids.

I have many times cured with it acute catarrhal conjunctivitis, phlyctenular conjunctivitis and keratitis and ulcers of the cornea, and have subdued the acute aggravations of conjunctivitis trachomatosa, where the above symptoms or some of them were present. It is also frequently successful in the treatment of abscess of the lid, which, while not a serious, is an extremely painful disease.

Dr. W. A. Phillips, in an article published in the Journal of Ophth., Otol. and Laryn., July, 1899, page 224, recommends the use of *Rhus tox.*: "When the ciliary muscle itself seems to be the special seat of trouble; when its muscular tone is disturbed from previous straining, and when inability is present after using the eyes for reading any considerable time, notwithstanding optical correction."

He has had much success with the drug in these cases and considers that its action here is on a plane with that of lameness or soreness due to rheumatism. In my opinion another factor may be spoken of. One of the differential points between *Arsenic* and *Rhus* is that the *Arsenic* patient is *actually* so weak that he cannot do what he would wish, while the *Rhus* patient *feels* so weak that he cannot do it, but by making the effort he can overcome his weakness and accomplish what he desires. This seems to indicate in the *Rhus* case an indisposition to exertion due to want of *tone* of the muscular system, and this explanation applied to the ciliary muscle would account for the successful action of this drug in the class of cases indicated.

I would not have it understood that I consider *Rhus tox.* an universal panacea for all the inflammatory diseases of the eye; all of these affections are many times extremely variable in their presenting symptoms and other remedies are frequently called for, but the drug under consideration is one of the first importance and is most reliable and efficient when accurately prescribed.

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DISCUSSION.

Dr. J. H. Buffum: It is a great pleasure to have this interesting and valuable paper presented to the society, inasmuch as it brings again to the notice of a homœopathic society the value of a homœopathic remedy in the treatment of eye diseases. It has seemed to me that since the reorganization of the O. and O. Society that in papers and discussions presented we have had much attention given to the technical and surgical aspect of the various affections of the eye and ear and very little to the homœopathic treatment of the conditions. In Dr. Deady's paper we have a most valuable collection of the verified eye symptoms of *Rhus tox.* and a thorough definition of the therapeutic sphere of the drug. I have time and again verified the curative value of the drug in the symptoms and diseases mentioned by Dr. Deady in his paper. I have also watched with increasing interest the remarkable results obtained by its administration in cases of severe injury to the eye-ball with perforation and in deep inflammatory conditions following operations upon the ball and in beginning orbital cellulitis. In this class of cases, when used in a low potency and often in conjunction with *Hepar sulph.* in the control of suppurative processes which have been set up, one may often be impressed with the wonderful achievement of homœopathic medication. In the rheumatic or gouty diathesis, when *Rhus* is indicated, its administration is often observed to have a much more marked curative effect upon the eye complications than upon the general rheumatic condition. In episcleritis and scleritis, when as is commonly the case we have a rheumatic or gouty base, it has proved of excellent value. In erysipelas of the eyelids, which occurs as the result of nursing cases of erysipelas, *Rhus* has proved to be almost specific. It has also promptly controlled many cases of acute conjunctivitis occurring epidemically during the prevalence of an epidemic of La Grippe. I must emphasize its prompt action in those cases of phlyctenular conjunctivitis when the lids are swollen and œdematous and spasm of the orbicularis retains the profuse secretion of tears within the lids to spurt out when a forcible opening of the lids is made in the examination of the eyes. A similar condition is some times an indication for *Calc. carb.* or *Conium,* but when these drugs are indicated the symptoms are made less intense.

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THIOSINAMINE IN AURAL AND OPHTHALMIC PRACTICE.

BY CHAS. H. HUBBARD, M. D.,

Chester, Pa.

FROM the *cruciferae,* an extensive family, of pungent but not poisonous variety of plants, comes the large mustard family. And we are indebted to *Sinapis nigra* (Black mustard) for the valuable therapeutic agent—*Thiosinamine.* This drug is also obtained from horse-radish root, but the volatile oil of the black mustard seed, after expression of the fixed oils, is the one usually employed to secure the thiosinamine used in medical practice. On heating a mixture of three parts of the oil with six parts of aqua ammonia and three parts of alcohol, on cooling there will be a deposit of colorless crystals of thiosinamine, of a slight garlic odor and bitter, burning taste, melting at 74 degrees C. It is freely soluble in water, alcohol and ether. It was originally proposed for use in medicine by Dr. H. von Hebra, Jr., of Vienna, who claimed good success from it in lypus and other local tuberculous diseases, when injected subcutaneously, and that old corneal opacities are cleared up. It is successfully employed in glandular affections of children.

Tousey, of New York, claims for it a specific action in keloids, and a remarkably softening and relaxing effect on old cicatrices; and these claims have ample verification in the practice of many physicians.

The mustard family has not received the attention from the homœopathic medical profession, commensurate with its merits; and the specialists of this society can illy afford to relegate *Sinapis* to a subordinate position. Its eye, ear, nose and throat symptoms are entitled to the highest consideration. And *Sinapis nigra,* especially, is of great value in acute and chronic rhinitis, acute and chronic pharyngitis, with involvement of larynx and trachea. Also in cough of an asthmatic character, wheezing, rasping or rattling. There may also be a short, hacking cough. It may be advantageously used in hay-fever.

Though there is no proving of the alkaloid thiosinamine, a close study of the symptoms credited to *Sinapis nigra* will prepare us for an intelligent understanding of this remedy in the special field to which your attention is invited.

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In choroiditis, corneal opacities, and catarrhal deafness, there are sufficient data to justify one in recommending thiosinamine as a drug of great value. No remedy and no method of treatment heretofore employed for choroiditis and corneal opacities have ever given any very satisfactory results.

Dr. Geo. F. Suker, of Toledo, Ohio, has contributed much valuable clinical experience in the use of this remedy. Thiosinamine has been used hypodermically in a 10 to 15 per cent. solution, a dose being ½ grain twice a week, gradually increasing to 8 grains once a day. The reason for administering it subcutaneously was to avoid the nausea and pungent taste. But if properly given, it can be as well taken internally, and is fully as effective. A favorite mode of dispensing it is in capsules. After trying several methods, an aqueous and glycerine solution seems to be unobjectionable to the patient, though a solution in diluted alcohol is well borne. I have never given more than 3 grains per day, in divided doses. My practice is to make a solution of such strength that an ordinary teaspoonful shall contain ½ grain of thiosinamine. The bottle should be well stoppered and kept away from the sunlight. It is best given as follows: Begin with ½ grain, taken preferably soon after breakfast, and continue five days. Then increase the quantity by taking an additional ½ grain at 4 to 5 P. M., and continue another five days. The dose may be increased in the same ratio and manner until 3 grains a day are taken, continuing it four to six weeks. Then it may be discontinued for two weeks, or give ¼ grain daily for that period, when the maximum dose may be restored. Continue the treatment while improvement continues. Should nausea or other unpleasant symptoms ensue, begin with ¼ grain dose and increase gradually; but untoward symptoms are avoided by not taking the drug when the stomach is empty. It is to be avoided in the evening, as it may cause disturbed sleep due to vivid dreams.

At the present time I am experimenting with thiosinamine triturated with sugar of milk, giving it in attenuated doses, but it is too early to report results.

Given in ½ to 3 grain doses daily, the drug increases the appetite, and causes augmented diuresis. Large doses—6 to 15 grains—cause nausea, intense headache, and malaise.

Notwithstanding the favorable reports of this remedy in catarrhal deafness, my use of it in this disorder has been simultaneous with other treatment, but I am satisfied it is worthy of careful consideration.

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To establish its sphere of action, a clinical report of three typical cases are herewith presented:

Case One.—Miss S., aged twenty-three years. A school teacher. No specific history. First consulted me June 23, 1898. Six years before, vision became seriously impaired. Had worn glasses for several years for defective eye sight, as follows:—O. D.+.50 D^s., with plain glass for left eye. Vision better without than with the above. Visual acuity was: O. D. $^{16}/_{15}$??? O. S. $^{16}/_{200}$, decidedly minus. Has monocular horizontal hemianopsia—objects that are discernible, see upper third only. Color-sense impaired. Ophthalmoscope, O. S. revealed choroiditis disseminata of the areolar variety. Defective vision seems to be out of all proportion to the pathological lesion. July 6, 1898, as a result of examination under scopolamine, prescribed the following: O. D.+.25 D^s. O. S.—.50 D^s.—.50 D^c. ax .60°. This increased vision of left eye from $^{16}/_{200}$, minus, to $^{16}/_{40}$, with difficulty. One week later began treatment with thiosinamine. September 1, 1898, seven weeks afterward, O. S. V. without correction=$^{16}/_{80}$, with correction=$^{16}/_{20}$, minus. Remedy continued as above, until January 7, 1899, the last visit of patient to my office, when vision without correction was $^{16}/_{20}$, slightly minus, and with correction $^{16}/_{15}$???? Though such decided improvement in the visual acuity, the changes in fundus were not marked and would seem to contradict the logic of act.

The next case is one of corneal opacity:

Case Two.—Miss E. B., aged thirty-three years, colored. Occupation cook. Since four years of age, when she had serious eye trouble, has not seen well, and vision gradually becoming more impaired. Fears she will be obliged to give up her work. A general diffused opacity involving both corneæ, with well defined maculæ, and some dense leucomata, evidently due to corneal ulcers in early childhood. Vision January 11, 1900, O. D. $^{16}/_{200}$, and O. S. $^{16}/_{200}$, minus. With a—2.50 Sp., vision of right eye raised to $^{16}/_{70}$ minus, and left eye $^{16}/_{200}$ plus. January 18, began treatment with thiosinamine. On the 30th of January, O. U. V.=$^{16}/_{70}$, minus. February 22, O. D. V.=$^{16}/_{50}$. O. S. V. =$^{16}/_{70}$. Have not seen patient for long time. With continued treatment, results still more gratifying might be confidently expected.

The next case to which your attention is invited is one of senile cataract, slowly progressive:

Case Three.—Mr. H., aged eighty-four. A gradual diminution of vision for many years. Health always good. No diabetic condition. An inveterate smoker, and no stranger to the "flowing bowl." Consulted me November 21, 1898, when vision was as follows: O. D. V.=$^{15}/_{200}$, minus. O. S. V.=$^{5\frac{1}{2}}/_{200}$, plus. Glasses did not materially improve vision. Gave a remedy for its psychological effect and told to report again. January 30, 1899, prescribed thiosinamine. February 27,

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examination revealed improvement as follows: O. D. V.=$^{18}/_{200}$. O. S. V.=$^{15}/_{200}$. Remedy continued. April 29, 1899, visual acuity right eye, no change, left eye, $^{16}/_{200}$? Since the above date, patient has reported very irregularly, but occasionally gets a bottle of thiosinamine to last five or six weeks. January 30, 1900, his vision was raised to O. D. V. $^{16}/_{200}$. O. S. V. $^{16}/_{70}$. The following prescription for glasses enables him to read print: +5.25D^{sph}.

Notwithstanding that the results in the above case may not be considered brilliant, still, in so unpromising a subject, it is highly gratifying. And in the cases cited—though simply corroborative—the grand possibilities of thiosinamine as a valuable therapeutic agent is clearly demonstrated.

DISCUSSION.

Dr. D. A. Strickler: My knowledge of Thiosinamine, including its pronunciation, is derived from Dr. Hubbard. When his paper came I thought I should look this matter up and learn what I could of it from other sources and probably give something that would be new to you. I find to my sorrow that I have nothing to prepare on the subject, so my information is entirely what the doctor has given us in his paper.

A remedy which will help us out in choroiditis, which will improve corneal opacities of years standing, and which will improve cataract is certainly worthy of our study. I think that this paper will justify us in pursuing some investigations of this remedy. I am not sure, and the doctor does not give any explanation of, how it acts; but the question arises in my mind whether it is not through its general action as a tonic; whether in the case of cataract reported the improvement was not such as we often find from building up the general health of the patient, the remedy having no local effect on the lens. In the case of choroiditis, whether there may not have been improvement from the use of glasses before he began his medicinal treatment, or whether the wearing of the glass prescribed may have had a beneficial effect after the use of Thiosinamine. I am not convinced that the doctor has accomplished all that he thinks he has by Thiosinamine. I wish to thank him for presenting the paper and showing so much original investigation and would recommend a further study of this drug along the lines he has suggested.

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TREATMENT OF SARCOMA WITH THE MIXED TOXINS OF ERYSIPELAS AND BACILLUS PRODIGIOSUS.

BY A. WORRALL PALMER, M. D.,

New York.

THE numerous modes of treating sarcoma or any other variety of cancer and the constant experimentation on the part of the profession with new methods only go to show how inadequate is our ability to meet this intractable disease.

These neoplasms are not so rare, as there are ninety-nine authentically recorded cases, situated within the restricted domain of the nasopharynx and pharynx.

For these reasons, and because I have been able to find only one case of sarcoma treated with Coley's fluid reported in our homœopathic literature, do I take the liberty of occupying your time with the resume of my investigations into the subject and my meagre practical experience.

Although surgery is, at present, the best method to meet this condition, personally I believe that more investigation into or trials of the remedial treatment should be made, because cancer is a constitutional disease, and it so very frequently recurs after removal with the knife.

Apropos to this, C. Mansell Moullin says in the Boston Medical Journal: "There is at least as much hope after an internal remedy that causes disappearance by atrophy or fatty degeneration as from the most extensive removal by operation. On *a priori* ground there may be even more."

Among the numerous drugs or substances which have been experimented with are the interstitial injection of Alcohol 40 per cent., by Haase; the injection of Pure Yeast Ferment, by De Bacher; subcutaneous use of 50 per cent. solution of the fluid extract of Chelidonium majus reinforced by same drug per oram; the cataphoric diffusion of Mercury from gold electrodes used by Massey; and lastly the mixed toxins of the streptococcus erysipelas and bacillus prodigiosus.

From my research the last is the only one that has attained any success or wide reputation and not been relegated to the usual oblivion of other medical fads. The reason for this I consider to be because Dr.

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Coley has not only been persevering, but scientific, unbiased and very cautious in its advocacy. At first he hoped and believed that in some form it would be beneficial in all forms of cancer; but he now only recommends it in sarcoma, and claims marked results only in the spindle celled variety of this.

As in many other cases, the discovery of the influence of erysipelas on sarcomatous growths was by investigation founded upon accidental occurrences, to wit.: Busch reported a case of multiple sarcoma of the face cured by an attack of facial erysipelas; Durante, a sarcoma of the neck; Biedert, an enormous round celled sarcoma, including the mouth, nose and pharynx; Bruns, a melanotic sarcoma of the breast; Gerster and Bull, each a recurrent sarcoma of the neck; all cured or disappeared with no return, after an erysipelatous attack. This happy result does not always follow erysipelas as cases of sarcoma relieved by erysipelas and later recurring or progressing after the attack is over are reported by Busch, Nelaton, Deleus, Richochon, Winslow, Powes and Dowd.

On account of these accidental cures a few observers produced erysipelas artificially by infusion with the living culture with success in many cases.

Then almost simultaneously Lassar, of Berlin; Spronck, of Utrecht, and Coley, of New York, believing that the curative action of erysipelas lay in the toxin of the living culture, experimented and found that they could produce equally good results with toxin, thereby avoiding both the danger and discomfort of the patient passing through an attack of erysipelas.

It has been shown by different observers that the combination of certain bacilli with disease toxins make such toxins more potent, and Rogers, of Paris, demonstrated that the combination of the bacillus prodigiosus with the streptococcus of erysipelas greatly augmented the virulence of the streptococcus on rabbits. Thereupon Dr. Coley used the combination on the human subject in sarcoma with far better results than before.

Regarding this, Dr. Coley says he cannot say exactly what part the bacillus prodigiosus plays in the cure of sarcoma, but remarks that the only cases cured were treated by the combination.

This preparation, the combined toxins, has been given the name of Coley's fluid, and that used during the last seven years has been made by Dr. B. H. Buxton, of Loomis Laboratory.

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Until about five years ago the toxins were made from cultures from a fatal case of erysipelas, but since that, sufficient strength has been obtained by passing the cultures through about fifty rabbits. The method of the preparation is virtually this: the mixed unfiltered toxins of the streptococcus of erysipelas and the bacillus prodigiosus are made from cultures grown together in the same bouillon and sterilized by heating to 58 degrees C. and then diluted in a sterilized menstrum.

In a recent conversation with Dr. Buxton he said that at present he made a double sterilization and then added some drugs such as thymol to preserve the preparation.

Dr. Coley, in his exhaustive article in the Jour. Am. Med. Assoc., August 20 and 27, 1898, affixed a table of fifty-seven cases of cancerous tumors treated with either his fluid or other preparation of erysipelatous poison with cure or at least disappearance of the then present manifestation of the disease and lengthening of the usual period of a recurrence of the condition.

The following is a list of cases of sarcoma of the nose and throat treated by cultures of erysipelas, or Coley's fluid, the physicians in charge and the time the patient is living after treatment at the time of the report in Dr. Coley's paper, in 1898:

(a). A spindle celled sarcoma of the neck and tonsils, inoculated culture—patient living six years after.

(b). A spindle celled sarcoma of the parotid—it had been extirpated twice previous to treatment—patient living one year after.

(c). A sarcoma (mixed celled) of the parotid—patient living three years after. The foregoing under Dr. Coley's care.

(d). A spindle celled sarcoma of the palate and pharynx extending to the vocal chords—Dr. W. B. Johnson—living four and three-quarter years.

(e). A round celled sarcoma of antrum-pharynx and neck—Dr. L. L. McArthur—child aged five years, weight gained from 37 to 69 pounds—later fatal recurrence.

(f). A round celled sarcoma of parotid, size of the first—Czerny, of Heidelberg—living over a year.

(g). A spindle celled sarcoma of the parotid—Horace Packard—living two and three-quarter years.

(h). A round celled sarcoma of the neck—H. Montague—slight return in six months.

(i). A recurrent sarcoma of the neck and tonsil—J. O. Roe—six months after treatment died of erysipelas.

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The mode of administration is cumulative. The injection is of course to be made under the most thorough antiseptic principles attainable. It is by far preferable to make the injection into the growth itself, although if this is impossible, it may be introduced into the nearest accessible point, but in the latter case the dosage needs to be doubled.

As a rule one-half (½) drop is the initial dose, and this increased one-half (½) drop each succeeding day until toleration is reached. This is evidenced by the natural reactionary fever rising to 102 degrees or 103 degrees F. In such case the following dose should be the same as the preceding, and if it should again go so high reduce the next dose one-half (½) drop. The dose is increased in this manner until the maximum is attained. When applied to the neoplasm itself eight (8) drops is the full dose, or if eslewhere, double that amount, sixteen (16) drops.

This last amount is to be continued daily until the tumor has disappeared.

The toxin may commence to reduce the tumor in a week, but its administration should not be abandoned in less than three weeks' trial. The time necessary to effect a cure is very variable, occasionally the neoplasm will almost disappear in two weeks, while on the other hand it may take several months.

The reactionary symptoms are a chill, followed by fever, generally lasting about three hours, although occasionally it may continue twelve hours—acute transitory swelling of tissues in the immediate vicinity of injection—usually myalgic pains commencing at point of injection and radiating frequently over the whole body—in the more severe reactions there is nausea or even vomiting—in my own case it produced a weakening menorrhagia.

Case.—Mrs. E. C., aet. thirty-four years. A tall, thin woman of neurotic temperament.

Family History.—Father had chronic bronchitis, but died of kidney disease. Mother was an invalid for seven years with rheumatism of hip and knee until death, which was caused by apoplexy—a sister died of gastric disease. The patient married eleven years—has two children living—boy at nine months died of entero-colitis—boy three and one-half years died of fall from window—two miscarriages. At ten years aet. the patient had diphtheria—at twenty-six, pleurisy—at thirty-one years, rheumatism of left shoulder and post-cervical region. It is impossible to obtain any indication of hereditary predisposition.

Subjective Symptoms.—Complains of post-nasal dropping of mucus, constant short hacking cough, malodorous breath, pain in region of spleen aggravated when lying down and throbbing in character when

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walking rapidly. After discovering the swelling in the throat and speaking of it she admitted there had been a sensation of a lump in the throat for about a year, but so slight she considered it of little consequence.

Objective Symptoms.—Nares. Rhinitis sicca, covered with dry crusts but turbinated bodies hypertrophied.

Naso-pharynx and pharynx. Mucosa slightly hyperæmic, follicles inflamed and enlarged, on the left side of these cavities is a sessile swelling, the general surface of which is much inflamed and half of the surface is covered with varicose veins about one-eighth of an inch in diameter—it extends more than half the width of the pharynx and vertically from the vault above to the lateral sinuses below—is neither painful nor hyperæsthetic—it has a boggy feel, but not as soft as an abscess—the tumor springs from the posterior wall of the pharynx, not connected with the tonsil as the left posterior pillar lies in front of the neoplasm and can be lifted free from it—neither of the tonsils are inflamed nor hypertrophied—a few cervical lymphatics on the left side are slightly indurated but slightly sensitive if at all.

The swelling had probably existed longer than an abscess would be forming, and there was neither pain nor fluctuation, still an exploratory incision was made, but with the expected negative results.

Although the tumor was situated over the principal chain in lymphatics of the pharynx it was not nodular but smooth, therefore the neoplasm was probably not of lymphatic origin, but an implication of the muscular tissue behind the pharynx.

A specimen was submitted by Dr. Klotz, the pathologist of the hospital, and the provisional diagnosis of angio-sarcoma made,—sarcoma because it seemed to spring from the muscular tissue and apparent predominance of blood-vessels, and of the angiomatous variety because of the enlarged blood-vessels on the surface.

The removal of the specimen for microscopical examination caused quite a severe hæmorrhage, lasting about two hours, notwithstanding the employment of the usual hæmostatics.

The microscopist pronounced it a small round celled sarcoma.

I showed the case to the Academy of Pathological Science, where two general surgeons who examined the case advised against extirpation of the tumor, because of its close proximity with the important blood-vessels and nerves of the neck, an opinion I entirely coincided with because of seeing two similar cases before. This agreement decided me in determining to try the mixed toxins as the treatment promising the best results for the patient.

April 4th. Commenced injections with one-quarter of a drop. I diminished the initial dose one-half because Dr. Coley personally advised it, as he thought the possible reactionary local swelling might seriousy interfere with respiration.

April 14th. The dose was increased one-quarter drop each day to date—when she took only two drops because it was deemed advisable

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to omit treatment two days during menstruation on account of great weakness of patient.

April 20th. Increased dose half drop per diem—on 16th and 19th treatment omitted on account of debility—dose 4 drops, which dose was continued till April 23d, when on account of the temperature twice having risen to 103 degrees F. and menorrhagia supervened only ten days after previous regular menstruation, I thought it prudent to reduce dosage to three and a half, which was continued until April 26th. Examination of pharynx today for first time showed a decided diminution in the congested appearance and size of the tumor. Formerly the tumor pushed the posterior pillar forward, so that if the pillar could not have been lifted away from swelling by the ring probe it would have seemed to be part of it; while today a small space could be distinguished between the tumor and the pillar. Dosage four drops.

In *resume,* I would call attention to the apparent susceptibility of the patient to the toxin. Because, although she never received over half the maximum dose, the following reactionary symptoms developed. Of the seventeen days on which full records were kept, on thirteen she had chills after every dose; there were severe muscular pains throughout the left side, occasionally extending to the right—one-third of the time the patient was nauseated, and three times vomited—the average temperature was 100.8 F.; twice it did not rise at all after injections of ½ or 2½ drops. 'Tis well to bear in mind that chills very seldom occur after the third injection.

Finally, I wish to thank Dr. Clausen, resident physician, who carried out most of the treatment while the patient was at the Ophthalmic Hospital; also, Dr. Bernard Clausen, who continued it after she returned home.

DISCUSSION.

Dr. T. L. Shearer: About one year ago an eminent pathologist made the statement that it was merely a question of time until the microorganisms peculiar to the group of malignant growth would be discovered; that, in fact, the problem chiefly presented to us for solution was to ascertain the proper staining fluid, the best means by which we would be able to make them reveal themselves. When one considers the onset, development and termination of carcinomata and sarcomata; the failure which so frequently follows surgical procedure, even when undertaken at an early period of the disease; the extension of the growth along the neighboring lymphatics to the nearest group of glands, we are forced, at least, to suspect a microbic origin. Since Dr. Coley began experimenting with his fluid, composed of mixed toxins, a number of observers have followed in his steps and some have undoubtedly had astonishing results. As far as the limited statistics allow of an opinion

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upon the subject, this method of treatment (in the hands of some surgeons) has given the greatest satisfaction in the round celled sarcomata; the spindle celled variety also yielding to the action of the fluid, but to a less extent; while Dr. Coley himself has had his best results in the spindle cell type. However, the location, duration of the disease and the general recuperative power in each instance may account for these differences. The fact that, as yet, the carcinomata have shown no tendency towards a cure under the erysipelas toxin certainly seems to also point to the microbic element in these growths as being different to those of the sarcomata; a condition of affairs which we would anticipate, from our knowledge of bacteriology. Dr. Palmer has done an excellent thing for the society in bringing this subject before us; for, I am sure that many medical men, in the rush of practice, read articles rapidly and often retain no deep mental impression of them. There is no excuse for any of us now, and I trust that during the coming twelve months, if an opportunity presents itself for testing the value of the toxins in these cases, we will avail ourselves of this new therapeutic agent; it seems to be the first clear ray of light that has fallen upon the possessors of malignant growths, whatever the final curative result may be.

Dr. B. W. James: I am much interested in this remedy, having a number of years ago been summoned to a case that was sent to me by a medical friend for the purpose of trying this remedy upon a case that was pronounced incurable. The patient had carcinoma of the liver, but criginally the left breast had been, by two operations, entirely removed. It was a very unpropitious looking case. There was a large ulcerated surface in the left mammary region, extending away up under the arm, and in the removal of the growth and from the destructive process that had gone on the intercostal muscles were exposed and bulged out so that I was afraid that we would have a perforation. Then all around the growth were little nodules about the size of the end of the thumb; some smaller. However, the husband said he understood that I had been using this remedy, and he wished it used. It was at that time the erysipelatous preparation that was being used. I used that preparation for a time and I was surprised to find in about ten days that these nodules began to change their appearance; the smaller ones disappeared and the larger ones diminished to the size of an ordinary pea, and the whole appearance of the surface which was ulcerating and discharging the most foul, pus-like, sanious secretion, changed, and the intense pain, those sharp lancinating pains that we have in these carcinomatous cases, greatly disappeared, but not entirely. I used the remedy by hypodermic injection in the left arm and very cautiously. First, one, two or three drops; then I would go up to five, six or seven drops, by injection, and she found that she had to have that amount in order to relieve the pain, which it always did. It made a wonderful change in the external appearance of this true carcinoma in from two to three weeks, but the enlargement of the liver and the great dyspnœa increased and she seemed to be rapidly growing worse, physically, while

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the ulcerated surface gradually improved and the sanious discharge nearly left. Yet her strength failed, the heart failed, and in spite of stimulation she finally died one day from heart failure. That was the first case that I used it on, but since then I have the toxin products instead and used it on four cases. In one case I had a fibroid growth of the abdomen springing from away back in the deep peritoneal interspaces. It did not seem to be ovarian. It was just as hard and firm as a schirrus. It was a large general growth on the left side. I used the toxin of this remedy. This patient was a young woman probably between thirty and thirty-five years of age. She was a school teacher and was determined to use the remedy faithfully, and I kept her under it for a year and a half, and the growth all passed away. There is but a little nodule of tissue left, the tumor having almost entirely disappeared; but still there is slight evidence of there having been a large growth there formerly. I injected the toxin product under the skin every third day, and she has been well and active for five years. I have had five cases in all. I was going to report them and I was waiting for another case quite similar to this. This case was somewhat more complicated, having a large hernia on each side, together with uterine complications, which gave her a good deal of trouble, and interfered somewhat with her comfort. I used it, however, very faithfully, and in time, with a stronger preparation, I got her up to seven drops of the latter preparation by injection every third day. It was quite active; it would always produce a chill, fever and much reaction, and sometimes faintness and pain, the increase of temperature and fever lasting from two or four hours or more. I kept her under that for months, the growth diminishing for some length of time, and then last summer when I was away it increased and she discontinued the treatment. I began to use it again upon my return home, but in some way or other it seems to disagree with her and the growth is now at a standstill. It affected her general health and appetite and she declined to take it any further.

Dr. A. W. Palmer: Since I wrote my paper a little accident has occurred, which I will speak of. There was one week, I think, that the patient had a complicating cervical adenitis, which was probably due to infection at the point of injection. The location was such that it was impossible to keep it sterile.

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"MASTOID OPERATIONS."

BY HOWARD B. HILLS, M. D.,
Youngstown, Ohio.

MASTOID disease is one of the unfortunate complications of catarrhal conditions of the middle ear, and from careful reading of our journals on this subject, the "fad" of the day for the relief thereof tolerates nothing less than the radical mastoid operation, so great indeed seems to be the determination of our aurists to get into that mastoid bone with hammer and chisel that nothing short of its complete destruction will answer their purpose. A little tenderness,—a slight flush, and the patient is quickly anæsthetized—the bone opened, only to be found in eight cases out of ten perfectly sound. Internal remedies, external applications, or the minor operation, which consists in simply going down with the knife beneath the periosteum to examine the bone and liberating any pus which may be confined there will never do. No, nothing but the radical operation, with all its attendant dangers and frequent disasters, will answer the purpose.

Tenotomy of the ocular muscles for the correction of strabismus was but a short time ago another *"fad,"* but recently many of the best men are writing strongly in favor of orthoptic training, which in many cases not only corrects the deviation, but corrects it physiologically. In general surgery, appendicitis holds sway,—everything is appendicitis and operations galore. In our city two appendices were *successfully* removed from the abdominal cavity of one woman by two surgeons at different times. Each surgeon found an appendix, Brown-Sequard's nauseating theory, transfusion, Koch's tuberculosis cure, ovariotomy—not castration, because that never works,—the patient won't have it—and a few more of these fads all combine to oftentimes put us, as a profession, in a most unenviable light. In the last year I have had thirteen cases of middle ear disease, in which I found it necessary to go down to the mastoid bone. In three of these the bone was opened—the other ten recovered most satisfactorily by thoroughly liberating the pus which had formed beneath the periosteum. I know objections can be urged against the method upon the grounds that too much is left to guesswork, but when the length and breadth of the more radical

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operation is measured, is there not quite as much guessing? Is there not some uncertainty as to the exact condition of the cells, antrum and attic? Are we sure that no necrosed bone remains? I ask, is it not better to perform the minor operations first, unless we are certain that necrosis and pus be found? Without dwelling on the ugly scar always left after an extensive mastoid operation—I will give three of the thirteen cases referred to above:

Case One.—P. D., aged eighteen, was referred to me by Dr. Kotheimer for mastoid disease November 28th, 1899. I found the ear discharging a thin briny smelling pus, the mastoid region greatly swollen and exquisitely sensitive, with much tenderness over the whole temporal region. The least noise penetrated the brain like a knife, causing him to cry aloud. I sent him to the Mahoning Valley Hospital, where, with Dr. Kotheimer's assistance, I operated the next day. It is not necessary to go into the details of the shaving and thorough cleansing of the entire region about the ear, nor need I state that the middle ear was washed with a bichloride solution, suffice it to say that we went down to the bone and found it necrosed from apex to base. The antrum was opened and curetted, so also the attic and every part where necrosis might be suspected. When we finished there was but little of the mastoid process left, the apex and anterior aspect had been removed, and we were as sure as we could be that our work had been thoroughly done. We next turned our attention to the region above, continuing the opening upward for fully an inch and a half. We found no pus, but on opening the dura a small quantity of yellow pus was discharged. Careful probing failed to discover more. The parts were dressed and a most satisfactory recovery was the result.

Case Two.—With another case, however, I was not so fortunate. Last spring Dr. K. brought me a little girl, twelve years of age. I operated on the mastoid, but not so extensively, because there was less of the bone involved. When I closed the wound, I felt that everything of a dangerous nature had been removed. The canal and mastoid are still discharging and, if permitted, I shall operate again.

Case Three.—February 10th, 1900. Dr. Warren asked me to call upon Mrs. B., aged thirty, who was suffering intensely with her right ear. I found her lying on the bed moaning. The drum head was bulged outward and much congested. The mastoid region was swollen, red and very sensitive to the touch. After packing the external auditory canal with cotton, and using the Politzer air bag, I found the drum membrane much relaxed and the pain not so severe. She was then taken to my office, where I laid the tissues over the bone open; a large quantity of pus escaped. The bone appeared perfectly sound, so the wound was dressed and the patient sent home. Her ear causes her no trouble. She hears well, and I have every reason to believe a great mistake would have been made if I had gone down into the bone.

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THE INFLUENCE OF THE TUBERCULOUS, SCROFULOUS AND GOUTY DIATHESIS UPON THE EYE.

BY WM. W. BLAIR, M. D.,

Pittsburg, Pa.

THE subject upon which our worthy president has asked me to address you today is of such great importance, and is withal such a vast one, that in a short paper it would seem to be impossible to do more than call your attention to some of the more interesting features in the ætiology and general management of the diseases under consideration. The comment is frequently made that we, as specialists, are prone to look upon the eyes or the ears as being separate or independent organs; at times losing sight of the all important fact that some apparently trifling eye affection is frequently but the external expression of an inherited or acquired systemic dyscrasia. In this connection I wish to call attention to, and emphasize the teachings of our older authors; of those of our school particularly who continually called attention to the importance of recognizing the influence of the different diathesis in the causation of many of the so-called local affections, and though the nomenclature has undergone many changes in the past decade, yet the underlying principles are of undiminished importance. Of special value is this attention to detail when we come to consider its relations to the diseases of the eye.

Taking up for consideration the different diathesis in order of their importance, I should place the scrofulous first. I have many times been asked by my patients, and have tried for my own satisfaction, to define scrofula, but have so far failed to find a fitting definition. There appears as yet to be no unanimity of opinion as to just what is necessary to constitute the scrofulous dyscrasia; however, it is established with perfect clearness, I think, that the frequency with which Koch's bacillus is found in scrofulous products—cold abscesses—caseous glands, etc., proves the close consanguinity between tuberculosis and scrofula, more than one-half of the scrofulous patients we see springing from tuberculous parents. Again, we repeatedly see children of apparently healthy parents, with the flat noses, Hutchinson teeth, and other unmistakable signs of inherited syphilis, and yet who are liable to all the par-

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ticular ills which affect the aforementioned individual. So that without defining the scrofulous diathesis we might safely state that it is an hereditary depravity or taint of the organism which produces a child that is weak, pale, flabby, with very little power of resistance to disease, subject to obstinate, recurrent skin eruptions, enlarged glands, mucous membranes, predisposed to catarrhal inflammations, and very liable to affections of the organ of special sense.

It falls to my lot to discuss briefly today the influence of this strumous condition upon the eye and its appendages. Inasmuch as scrofula is essentially a disease of childhood, we find our little patients principally among the children of the poorer classes, and the ocular manifestations of the disease are many—including blepharitis, conjunctivitis, catarrhal as well as phlyctenular, and its accompanying iritis; and what is not at all unusual is to find in a pronounced case of lymphatism, a combination of all the above-mentioned conditions.

The phlyctenular form of conjunctivitis and keratitis is by far the most frequent of all the ocular disorders, and like most of childhood's ailments, is followed by the happiest results, where intelligent treatment is promptly and rigorously carried out.

To begin with, I consider attention to the general health and surrounding of utmost importance. It is absolutely imperative that the child shall have fresh air, and lots of it, nourishing food properly selected, and cleanly surroundings. Of equal importance do I consider also the withdrawal of sugar from the dietary. You will find invariably that children suffering from lymphatism are inordinately fond of sweets, which seem to disagree with equal certainty. I have in mind three cases of strumous children amongst the well-to-do class, who are under strict orders from me not to indulge in candy and sweets generally, and who *will* break over once in a while, and just as regularly bring on thereby an attack of phlyctenular keratitis. Of course the question of getting our little patients out in the fresh air when they are suffering from the almost constant blepharo-spasms is always a question which is difficult of solution, but may be managed with the aid of dark glasses and a suitable eye shade—I never use a bandage in these cases. As a reconstructive, I have great confidence in the routine employment of cod liver oil, which has proven in my hands most beneficial. As a routine treatment, I know of nothing more satisfactory than a daily application of a stimulating mercurial ointment; to my mind nothing has as yet superceded the classical Pagenstecher recipe, with the remark, however, that

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the vaseline be replaced by Ung. Cetacei, to which a few drops of olive oil have been added to keep from getting hard.

Inasmuch as one of the most important of the scrofulous manifestations is the superficial keratitis, I feel that it might be well to consider briefly the value of careful differentiation between this condition and the other affection, which is similar in appearance, namely, diffuse interstitial keratitis, the latter being invariably of syphilitic origin, either acquired or inherited, while the former will be found to come properly in the class of scrofulous symptoms. It might not be out of place to mention the principal points of difference, upon the consideration of which a given case may be confidently placed in one category or the other. To illustrate: the syphilitic variety will invariably be found to be parenchymatous, the pathological change being confined to the substantia propria, leaving the epithelial surface intact; the cornea may indeed be lusterless, but is not rough or uneven. If the presence of vessels can be demonstrated they cannot be traced from the conjunctiva across the limbus, but disappear beneath the latter; they are not clearly defined, but owing to the depth of their situation impart to the tissues that peculiar pinkish flush which has been designated as the "Salmon patch," and is pathognomonic. On the other hand, scrofulous keratitis declares itself by rough uneven surface, the vessels when present running directly across the limbus into the conjunctiva, and are furthermore of a bright red color. I would like to emphasize the importance of this distinction being made, as the treatment of the two conditions must of necessity be so radically different. In some cases, where the differentiation cannot be made upon the lines just indicated, a careful study of the family history will greatly aid a solution of the problem, and thus we may without difficulty arrive at a correct view of the condition.

Passing to the consideration of the second sub-division of my topic, I would say that the *gouty diathesis* offers to us for study a field so wide that one might almost approach it with dismay. Writers in all parts of the world, and in all the branches of medical research, have given it most careful and painstaking attention—and still the enemy holds us at bay and we have from year to year little to show as evidence of our continual warfare against this enemy of all classes of mankind, rich and poor alike.

The gouty diathesis rests upon a faulty nutrition—metamorphosis, which results in the accumulation of uric and phosphoric acids in the blood. It renders the individual inclined to inflammations in the various organs and tissues, and results further in the deposit of uric salts there-

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in. In most cases heredity plays the all important part in the causation of gout, and moreover it is frequently handed down from one generation to another, through many years. However, it is also a matter of fact that the dyscrasia is one that can undoubtedly be acquired, and furthermore by such a habit of life as is well known to be liable to produce attacks of gout in those who already suffer from the inherited tendency to the same. These predisposing causes are various, but foremost amongst them is the overuse of rich food—spirituous wines and liquors—along with the sluggish habits of those who are prone to err in this direction. Also amongst causes may be mentioned mental worry, overwork and exposure. From the above it would appear that gout is a disease of the opulent, and an accompaniment of luxuriant living, which indeed is true, though there is a form of the uric acid diathesis which affects the poorly housed, underfed victim, and is hence known as poor man's gout. Still, I think I am safe in saying that our gouty patients will be nearly always found amongst the more well-to-do class of society.

As indicated above, the eyes are liable to be affected amongst the many other organs, and in a similar manner. The most to be feared enemy of the gouty sufferer is, I think, *iritis*, which may arise either independently, or as secondary to scleritis, during a general gouty outbreak.

Iritis supervening in a case of gout is of the plastic variety,—is extremely painful, and is attended with more conjunctival injection than the other form; the plastic exudation is less, consequently the adhesions are not so numerous nor so strong as those found for example in a case of the syphilitic variety.

As is well known, in iritis of the gouty form the inflammation rarely extends to the ciliary body, while choroiditis might be named as a possible, though infrequent, complication. The principal points to be desired in the treatment of a case of gouty iritis, I think, may be said to be three in number:—

1st—To secure and maintain full dilatation of the pupil;

2d—To relieve the pain; and,

3d—To give the closest attention to the constitutional dyscrasia, which is the underlying cause of the trouble.

As to the first, I have not had any marked success with any other mydriatic than atropine, which, if given early with sufficient frequency, will be a safe-guard against the much-dreaded posterior synæchia.

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For the relief of pain my plan is to apply hot water fomentation for fifteen minutes at two-hour intervals, and in the interim to keep the eye covered and warm by contact with a rubber hot water bottle. In the last few years I have used with great satisfaction the artificial leech of Huerteloup, drawing from ½ to 1 ounce of blood from each temple, and the relief therefrom is often surprisingly prompt and permanent.

It is, however, in the management of the general condition that we will find the most satisfactory outcome. However, this phase of the treatment I will take up in a moment. Of the other and less frequent eye troubles dependent upon the gouty diathesis I would call to mind scleritis and episcleritis, both of which I find to be much benefited and kept in a comfortable condition if a moderate dilatation of the pupil is secured, probably owing to the fact that this form of scleritis occurs most frequently in the close neighborhood of the ciliary body.

Recent observers have pointed out the frequency with which *glaucoma* is found amongst gouty subjects—and as my own experience confirms this I would pause long enough to make mention of the fact and to call attention to the importance of recognizing in this affection a possible gouty tendency—and to recommend placing such patients under the usual dietary restrictions.

Lithiasis palpebraris is another important ocular complication, and one which is very frequently overlooked; it is the accumulation of small deposits of calcium carbonate in the ducts of the Meibomian glands, or at times in the glands themselves, which often assume a considerable size, and projecting above the level of the conjunctiva will produce an irritation similar to that set up by a foreign body. The removal of these little offending particles under cocaine will afford complete and instant relief. In gouty subjects presenting a continued irritation of the eyes, I make it a point to always look for this condition, and where found will frequently indicate a gouty tendency, and thus lead us to a proper understanding of the case in the absence of other and graver symptoms.

A further complication which is frequently found is a very obstinate form of catarrhal conjunctivitis, which I find is best treated by any of the milder astringent lotions.

The decided tendency to relapse is one of the most characteristic features of the gouty diathesis, and if we can so treat our cases as to secure them from a continued repetition of attacks we may consider our work well done, and will indeed deserve the thanks of our patients. The general management of this class of patients is one of the most difficult in the broad field of internal medicine, and requires much care and a great

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deal of patience on the part of the physician, and on the part of the patient the strictest attention to diet, and great abstemiousness with regard to the character of his food and drink.

It is of course conceded by all authorities that the hot vapor baths at Hot Springs, Va.; St. Clair Springs, Michigan, in this county, as well as those of Homburg, Kissingen and Badenbaden, Ems and many others, are of inestimable value as an aid to the elimination of the uric acid excess. But in general practice we usually find that a journey to one of these distantly removed localities is out of the question, and as an excellent substitute I find that the employment of the so-called home Turkish bath an excellent and very simply carried out method. This apparatus consists of a small cabinet, in which the patient is enclosed, the heat being supplied by an alcohol or other lamp; for the purpose of producing diaphoresis it seems to me that this simple and practical apparatus meets the requirements.

Tubercular affections of the eye occur usually as late manifestations of general tuberculosis, and are of interest to us more in the light of their diagnostic value than as offering any promise of successful treatment.

Tubercular conjunctivitis is an exceedingly rare affection, but on account of the tendency of the process to spread to the cornea and attack the deeper structure of the globe is particularly formidable and unsatisfactory to treat; the only treatment offering any hope of success being to currette or excise the affected tissue.

Tubercular iritis is also rare. It makes its appearance before the period of full growth and is first manifested in the form of small yellowish nodules, which appear in considerable numbers, frequently become confluent and disappear, only to be replaced by others. Where the tubercles become confluent the prognosis is bad; for therein lies not only a greater danger to the affected eye, as metastatic changes are liable to ensue. Under treatment some few cases recover, but in general, where the destructive process has reached any considerable proportions, enucleation is the only remedy; as attempted excision of the affected portion of the iris has generally proven unsuccessful. Aside from operative measures the case is to be managed along the line of routine treatment for iritis, giving special attention to the keeping up of the general strength by nourishing diet, Cod Liver Oil and antistrumous measures in general.

Tubercular choroiditis occurs in the acute and chronic forms. The acute as miliary tuberculosis and secondary to tuberculosis in other

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organs. The chronic is extremely rare, much more so than the miliary form. It is found in one eye only and appears sooner or later to be associated with a similar condition in the cerebral tissue, which ends fatally.

DISCUSSION.

Dr. J. N. Anderson: We are to be congratulated on the fact that the subject of tuberculosis has a very prominent place at our meeting in discussing its effect upon four of the most important organs, namely, the eye, the ear, nose and throat. The subject of tuberculosis in Canada is receiving a good deal of attention. We have a large institution, with associated cottages, erected by the generosity of private individuals, in the region of our Northern lakes, and, I understand, on a very elevated position, comparatively free from dampness. The government of Ontario has taken up the matter, as well as private individuals, and is establishing institutions for the treatment of tuberculous subjects among the poor. The doctor did not define the difference between scrofula and tuberculosis, and perhaps for the reason that it is very difficult to tell where one begins and the other ends. The question comes up in my mind, both from what I have read on the subject and from my own experience as to what relation syphilis has to scrofulosis. And, again, how far is vaccination responsible for the spread of tuberculosis. Now, it is claimed by persons of very great note that instead of preventing smallpox by vaccine, we are poisoning ourselves by a form of syphilis. In the treatment of these forms of diseases, I have found very satisfactory results in giving our homœopathic remedies. I have used the *Syphilinum* and *Tuberculinum* for these cases.

If there is one thing that I criticise in the paper more than any other, it is the writer's failure to mention our homœopathic remedies. It seems to me that the younger members of our Society—some of them at least—are not giving the place to our homœopathic remedies in treatment which I think they should. In the paper under discussion it is difficult to tell whether the writer is a homœopathist or an allopathist, as far as the treatment is concerned. It is almost purely local, except perhaps the giving of oil as an internal remedy.

Another point, I take exception to, is that he says diffuse interstitial keratitis is exclusively of syphilitic origin. I cannot agree with that statement. I have had a great many cases of this kind of keratitis and I am very positive that they were not syphilitic in origin, and I have succeeded very well with our homœopathic remedies alone without having in mind any specific origin.

In regard to the gouty and rheumatic troubles, it is hard to separate the one from the other, as apparently the same cause is responsible for the two. Perhaps in the gouty, long inheritance may have extended the symptoms and made it much more difficult to remedy. There is one effect of this poison upon the eye which I think the doctor did not mention, and that is its effect upon the muscles. I have had several cases of

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decided squint as the result of rheumatic poison upon individual muscles of the eye, but under our homœopathic remedies the cures proved to be permanent.

Dr. A. B. Norton: There is one point in Dr. Blair's paper that I would like to emphasize, and that is the importance of stopping all sweets in these cases of scrofulous ophthalmia. It is to me one of the key-notes of the cure; in my opinion many of these cases are not receiving sufficient meat-diet, and I have found such patients greatly benefited by *Bovinine*. It as a remedy that I use a great deal.

Dr. C. G. Fellows: Internally or locally.

Dr. A. B. Norton: Internally. There is one case that came to me very recently, a child with superficial ulceration of the cornea, with most intense photophobia and lachrymation, the head buried in the pillows day after day, the face breaking out with eruption. It was almost impossible to open the eyes to get a look at them. I treated that child for at least three or four weeks in the hospital, the child getting the best of care and attention; and with the best prescribing of remedies I knew how, there was absolutely no improvement that I could see. I then began the use of *Protonuclein* in the eye, dusting in the powder, holding the eye open to do so. Within three days after the use of this three times a day the child opened the eyes herself and they went on to rapid recovery. That was my first experience with *Protonuclein* in this manner, but it was very successful.

Dr. D. W. Wells: What preparation of *Protonuclein* was used—Reed & Carnrick's?

Dr. A. B. Norton: Yes.

Dr. C. G. Fellows: I have gotten the same results in some similar cases with Bovinine locally. This has been advocated in some few journals, and I have used it in a few cases in my clinic in Chicago. The same remedy, internally and locally, which we give otherwise might as well be used. We sometimes get juice from beef, dropping it into the eye—localized feeding of the cornea. I have not used it internally, but I have used it locally with very good results.

Dr. G. M. Haywood: I wish to report the case of a boy of fourteen on whom I tried Bovinine first, and I then used *Protonuclein*. I think it took nearly a month to cure him, but I saw him yesterday, or the day before, and he said that he had not had a particle of trouble with his eyes since. That is the only case in which I gave it, and, fearing trouble, I kept it up persistently for a month, and cured the case.

Dr. Anderson spoke of the spread of syphilis through vacinnation. It is imposssible when we use pure vaccine virus—that which is supplied from the heifer. It might have been in days of yore when the vaccine was carried from one person to another, but I do not see how it can with the pure vaccine virus.

Dr. C. J. Swan: In all cases of phlyctenular and other forms of keratitis in children the importance of examining the refractive condition should be recognized. In many cases this is neglected because the eyes

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when first seen are too much inflamed to permit examination of the refraction. The inflammation usually yields readily to local and internal treatment, and often when the eyes have resumed their normal appearance nothing more is attempted. The disease in case of refractive error is especially apt to be recurrent, and it often happens that the trouble is successfully (?) treated again and again without correction of the refraction, whereas an examination and correction of existing errors would in most cases prevent recurrence.

Speaking of the treatment of posterior synechia, the doctor says that of all mydriatics atropine gives the best results. I shall agree with him upon this point if he will make one addition—a 4 per cent. sol. of cocaine added to the atropine makes a much more powerful and satisfactory mydriatic, and one that will very often break adhesions when atropine alone has failed. The cocaine constricts the walls of the vessels of the iris, driving out the blood, and thus allows the atropine to act with more freedom. A nodule upon the iris may be any one of three distinct varieties. It may be tubercular, syphilitic or sarcomatous, and it is impossible in most cases to differentiate between these three by the appearance alone. The syphilitic nodule is said to occur more frequently at the pupilary margin, while the tubercular selects the scleral margin of the iris for its development.

Dr. E. J. Bissell: Regarding the treatment, especially of superficial and phlyctenular keratitis, I have found very frequently these cases associated with a nasty condition of the nostril, and when we consider the intimate nerve and vascular supply of the interior nose and surface of the eye, it would seem that the irritation of the scabs and retained secretion would naturally aggravate conditions of the eye, and it is therefore not surprising to find that some of these cases will take a turn for the better when the nose is cleansed by some antiseptic solution. One other point of treatment, and that is during the latter stages of interstitial keratitis I have found benefit from the process which I have spoken of before—steaming the eye—and then using massage. It certainly does hasten the clearing of the corneal tissues.

I take exception to the writer's statement, that interstitial keratitis is always syphilitic. He says it is acquired or inherited. As most of these cases are children, the question of its being acquired, in nine cases out of ten, can be eliminated. I have had a number of cases where I have had every reason to believe the parents revealed the truth, and I could get no syphilitic history. The doctor made this statement that the treatment would necessarily be different. Now, I do not believe because we have a theory that a case may have originated back in the grandparents in syphilis that, as homœopaths, we need necessarily consider an antisyphilitic treatment in a child. I do not believe in it; I have not found it has given the best results.

Dr. C. L. Rumsey: I take exception to Dr. Blair in the statement that interstitial keratitis is always syphilitic. While I believe it is rare not to find the syphilitic dyscrasia, I have now a case without this taint with the blood count reduced to three million.

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In addition to the homœopathic remedy, I find it very necessary to pursue three lines of treatment:

First: Salt baths, which I institute immediately, particularly in children;

Second: Dietary regime, where all sweets are stopped, with regularity in eating, and a strong nutritious diet;

Third: Massaging the eye-ball, to increase the lymphatic flow and stimulate the tissues. I always attend to the refractive power of the eye when the eye will permit testing the vision.

Dr. B. W. James: I believe it to be an independent disease. I do not believe there is necessarily any syphilis or tuberculosis connected with most of these interstitial cases. I have seen many cases and have seen them get well without another symptom of tuberculosis than this inflammation in the case. Such cases had remained well after the treatment, too. I treat corneal inflammation as we would treat any other inflammation, and when it suppurates I use *Hepar sulphur calcarea* or *Silicea* or *Mercurius vivus*—these remedies have proven very curative in these cases in their incipiency or even when progressive.

Then, another point with regard to the vaccine disease and tuberculosis being identical, and that vaccination produces the necessary result of tuberculosis in all cases. Now, I think we can all agree that they are separate diseases not depending one upon the other, and vaccination is one and tuberculosis is another. I believe that both of these diseases can be differentiated very clearly and very definitely, and, as a matter of experience, let me state that we had some twenty-five years ago an epidemic of variola in Philadelphia; it originated in Washington and extended to Baltimore, Philadelphia, New York and Boston and other cities. At that time physicians were vaccinating with the infant arm crust. I had some genuine cow-pox tubes from Germany, and Dr. Martin, in Boston, was beginning to propagate the cow-pox virus for sale to the profession. I sent word to him to send me the difficulties in the way of vaccinating heifers. He did not reply, and I asked one of the physicians of Boston by another letter if he would not obtain and give me points of difficulty in propagating the cow-pox virus. He was told that it was a matter of business with him, and he declined to give me the information. I immediately took some of the real cow-pox virus and went out to the drove yards and bought a heifer and thought I would experiment myself. I vaccinated that heifer very thoroughly over the udder and in eight days had a beautiful crop of vaccine pustules. I had my ivory points all ready and I obtained enough to make 150 points, charged on both sides. I used that and then kept on purchasing and vaccinating animals right along for virus for my own use. Sometimes I had as many as five animels under vaccination at one time. I supplied myself with the purest virus and supplied quite a number of my medical friends from my own stock, and of these cases which I sold to others, or results, I kept no record. I would simply say that I made over 3,000 vaccinations during that run of the variola epidemic, and I watched these cases. There were about two or three who were of a

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sanguineous temperament who had very ugly arms and very deep ulcerations. I think it was more a condition of impoverishment of the blood, and I can truly say from my experience at that time that there was no tuberculosis following any of these cases. I believe vaccine disease is one variety and tuberculosis is another entirely. Therefore, I do not agree with this idea of sameness that is being promulgated.

There was one point mentioned by Dr. Anderson, and that was of the fact of ozone not being of very great benefit in these tubercular cases. I do not believe that ozone has a very great influence on the disease itself. We do know that sunlight will kill the germs, if you place your patients where they can get a great deal of sunlight, with plenty of gentle currents of surrounding atmosphere to carry off the impure emanations from about the body; you will thereby get a fair number of cures in your cases. I believe that this is the secret of success in many of these tubercular cases of Southern California and in localities where the temperature is equable and the surroundings are such that the patient can get out daily and nearly all the time in the air and the sunlight. I do not believe that it depends as much upon ozone as it does upon sunlight, thus killing out the germs and aiding the patient in that way. There is one other point mentioned here that I just want to speak of and that is the local bath—the alcohol lamp and the box-bath. This is very good treatment often, but caution must be observed. I saw a case mentioned recently where, by some means, the alcohol lamp was overturned by the patient and the whole box was in a flame instantly, and before they could get the box undone and get the patient out into the air the occupant was very seriously burned. I am always careful not to do anything that would be likely to injure or kill my patients.

Dr. W. B. Kreider: In regard to the treatment of iritis and synechia, if I do not succeed with my atropia 10 per cent. and cocaine 4 per cent. in twenty-four hours in breaking up the synechia I inject normal salt solution and the next morning I invariably have a round pupil.

Dr. C. G. Fellows: How do you do it?

Dr. C. J. Swan: How much?

Dr. W. B. Kreider: Sub-conjunctivally. A few drops; it does not take large quantities.

Dr. W. W. Blair: When in the preparation of my paper I reached the consideration of interstitial keratitis, I was aware that I was upon ground that would elicit considerable discussion, and in defense of my position must say that, taking my own individual experience as a guide, I should be forced to conclude that all cases of true interstitial keratitis are due to either inherited or acquired syphilis.

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THE INFLUENCE OF TUBERCULOUS, SCROFULOUS AND GOUTY DIATHESIS UPON THE EAR.

BY SAYER HASBROUCK, M. D.,

Providence, R. I.

SINCE the ever memorable discovery of bacillus tuberculosis by Koch, in 1882, however divided opinions may be as to the micro-organisms of other specific diseases, there is no longer any doubt of the existence and specific nature of the bacillus tuberculosis. It has probably claimed more victims than war or plagues, it being estimated that fully more than one-seventh of all mankind die of it.

The fact that tubercular patients are liable to diseases of the ear has been recognized by all writers on aural diseases and many illustrative cases are to be found recorded. There are good reasons to believe that it may occur both primarily and secondarily—that is, the original disease may have its inception in the ear, and that it may also follow tubercular inflammation of other organs. As an illustration of primary tuberculosis I will cite a case that came to me early in my special work. The full importance of the symptoms I did not recognize at the time, and it was only on reviewing the full history of the case that I was able to diagnose the early symptoms.

Case One.—Mr. T., aged twenty-seven, came to me after an attack of influenza, complaining of deafness and a full, stuffy feeling in the right ear, without pain—and let me here remark that in my experience tubercular disease of the ear is very apt to be unilateral. On examination of the ear I was only able to note a slight congestion of the upper part of the M. T. Inflation showed the Eustachian tube to be open, and I gave him the assurance that his symptoms would pass away in a few days, but to my surprise he returned again on the third day with an active discharge, and on cleansing the meatus I noticed a granular polypus in the perforation. The strange symptom to me was that at no time had he been conscious of any pain in the ear. I treated him for some weeks with but little success in abating the discharge or eradicating the return of the polypi. As he did not regain his strength, by the advice of his physician and myself, he decided to take a vacation in the White Mountains. Previous to going away his physician gave him a careful examination, as he had a tubercular family history, and as at

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that time there were no other signs of tubercular trouble, and as the ear trouble was not recognized as tubercular, he was assured that he had no cause for worry. He had been in the mountains less than ten days when all discharge from the ear stopped and his general conditions improved. On his return he reported to me, looking the picture of health. On examination of the ear no discharge was noted, but a small perforation of the upper and anterior part of the membrane could be seen. He remained well for fully four months, but in the early winter he contracted a severe bronchitis, which seemed to grow worse instead of better, and though at first the ear was not affected, it was not long before there was noted a profuse discharge, which he attempted to care for himself for three or four weeks, when he again returned to me with the statement that his sister had noticed something red in the ear. I found the meatus full of polypi. These I removed and for many weeks treated the case without improvement, every few days finding it necessary to remove polypi that seemed to grow in a night. There was a large perforation, involving the whole anterior portion of the M. T., and there was now found marked tubercular deposit in the left lung. He then removed to Minnesota and during the next summer rapidly regained his health and remained well for some five years. About this time he removed to Kansas, where he contracted a severe cold and died in a few months' time of tuberculosis. I was not able to learn whether he had a return of his ear trouble, but presumably he did.

The history of this case covers a period of nearly six years, and there were no general signs of tuberculosis at the time of the first trouble with the ear, still the symptoms of its onset, deafness with a full stuffy feeling about the ear without pain, and the persistency of the discharge even though carefully treated and its rapid subsidence on his removal to the mountains, and the after development of tuberculosis, prompts me in the diagnosis of primary tuberculosis of the middle ear.

I have since seen one other case similar in almost every way, but this young man removed almost at once to Colorado, where he has remained in good health for the past eight years.

Dr. H. Knapp, in the Archives of Otology, Vol. XXIII., reports a case of primary tuberculosis of the mastoid process. This patient had an ulcer on her back, others under the left ankle and about both eyes. The right mastoid and supra-auricular portion of the temporal bone were swollen, ulcerous, granulating and discharging fetid matter. Both auricles, ear canals, tympanic membranes and middle ears were normal, hearing in both ears impaired. Dr. Knapp operated and found the interior of the mastoid and adjacent part of the squama were a mass of decaying bone substance, all of which he removed, and after a few months' time the wound healed; though no bacteriological examination

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was made, still Knapp thinks that no one will dispute his diagnosis. From the fact that tubercle bacilli are so rarely found microscopically in these undoubted cases of tubercular disease in and about the ear, Dr. Knapp suggests the advisibility of inoculation of the morbid substance into the anterior chamber of rabbits, where the picture of the inoculation tuberculosis is well known. Tuberculosis of the mastoid and temporal regions has been considered rare, though reported from time to time, but personally I have not seen such cases, unless some of the mastoid cases I have seen in young children, diagnosed as scrofulous, might come under that head, but here comes up the question of tuberculosis and scrofula, which we will speak of later.

Secondary invasion of the middle ear is more common, though not so common as one would expect when we consider the well known fact that tubercular patients are prone to inflammations of the upper air passages. In all my investigations I have only found two series of statistics, those of Moldenhauer, who in one year investigated 294 cases of tuberculosis. Only 24 of these were found to have aural disturbances.

In the April, 1900, number of the Journal of Tuberculosis, Dr. Karl Von Ruck, the editor, says: "In the last 1,000 consecutive records examined, I found 32 cases. In eight both ears were involved." In all of his cases the deafness was slowly progressive and did not yield to treatment. He says that in all except one case inflation was easily accomplished. The widely open tube he thinks accounts for the absence of pain prior to the perforation of the drum, as well as for the occurrence of the infection.

He says that in 31 cases tubercular bacilli were found in the discharge, although repeated examinations were necessary for their demonstration. This is by far the highest average I have found, and is admittedly only obtained after repeated examinations, showing that the bacilli is not a constant factor.

Whether this is a fair average, I am not prepared to say, but on discussing the matter with physicians who make a specialty of this kind of work, I find that they rarely meet with aural complications. As the matter stands at present, it opens an interesting field for future investigations. Of those cases that follow tuberculosis of other organs much might be said; at the same time the subject is best covered by one or two characteristic cases.

Case Two. -Mr. F., aged thirty-one, a blacksmith by trade, had for two years suffered with tuberculosis following pneumonia, but he has

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been able to keep about his place of business until two months ago. Since then he has been confined to his house. On my first visit I found him complaining of a terrible noise in his head and a great pressure in his ear. Examination of the pharynx showed tuberculosis ulceration of the right tonsil, and inspection of the ear showed what appeared like a dense membrane across the meatus. As this showed no evidence of congestion I was inclined to the opinion that it was a cicatricial band that we sometimes see as a result of old chronic middle ear catarrh, but I was unable to get any history of previous aural trouble, and he insisted that his hearing had always been good up to a week or ten days previous. As he complained of no pain, I did not feel justified in operative interference, and decided to await developments, and these came in two days later with an abundant discharge of foul smelling pus. This relieved the pressure, but not the tinnitus, and in a few days the meatus was almost full of a mass of polypi. As his general symptoms grew so rapidly worse no attempt was made to remove them, the patient dying within a week. This case was characterized by its sudden onset and lack of pain.

Case Three.—Mr. B., a printer by trade, for a number of years had been in poor health and had found it necessary to live in the south and west to feel at all able to follow his trade; but being a native of the state of Maine, he was anxious to work near home, and for the past year had been located in Providence, where he said his catarrhal trouble had demanded almost constant attention, though his ears had not given him any trouble until a few months previous to his coming under my care, when he suddenly became deaf in both ears. This was shortly followed by a discharge and partial recovery of his hearing in the right ear; in the left he was only able to hear loud conversation, and though he had been under constant treatment at the hands of a specialist there had been no apparent improvement.

I found a large perforation of both ears, with persistent, though not abundant, discharge. I treated him for some time with but slight improvement, when I advised his consulting a specialist for his general conditions, and at his advice he again returned to the south; but whether there has been any improvement in the ears I am not able to say. This case, like the other, is marked by the sudden onset of the symptoms, grave in character, but without pain, and slight, if any, help from treatment.

Miliary tubercles have been seen by a number of observers on the membrana tympani, though personally I have never recognized them if they were present in any of my cases.

Cholesteatomatous material, though usually present in tuberculous or scrofulous patients, is said not to contain the tubercular bacilli, though what would be the result of the inoculation test I am not prepared to say.

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We have thus far considered the destructive phenomena in connection with tubercular disease.

Of the non-suppurative diseases, such as acute and chronic catarrh of the middle ear, I do not find mention of tuberculosis as a causative factor in the many text-books on the subject which I have consulted; but in my opinion it should receive very prominent mention, as I think you will all agree when you consider the marked tendency in this disease to catarrhal inflammation of the upper air passages, and at times it is probably the cause of sclerosis of the middle ear. These conditions may not be tuberculous, but they are no doubt caused by the tubercular diathesis.

The subject of scrofula from the earliest days of medical literature to the present time has been a bone of contention, until now it has about lost its individuality in the hands of our advanced pathological friends and has been assigned to the tubercular family under the head of tubercular adenitis, and they would probably prefer that we should speak of a tuberculoid diathesis, if you will allow the expression. Still with the present generation of physicians I believe it will long maintain its present clinical importance as a causative factor in disease, but as we keep abreast with the advance in pathology its limits will grow less and less.

In drawing a line for a basis for this discussion I have been guided by the conclusions formulated by Frederick Treves, F. R. C. S., England, in his essay on scrofula.

1.—The manifestations of scrofula are commonly associated with tubercle, or if no fully formed tubercle be met with, a condition of tissue obtains that is recognized as being preliminary to tubercle. Anatomically, therefore, scrofula may be regarded as a tuberculous or tubercle forming process.

2.—The form of tubercle met with in scrofulous diseases is usually of an elementary and often immature character, whereas in diseases called tuberculous, in a strict clinical sense, a more perfect form of tubercle is met with.

3.—Scrofula, therefore, indicates a milder form or stage of tuberculosis, and the two processes are simply separated from one another by degrees.

Briefly, then, scrofula is a peculiar inflammation of the glandular and lymphatic tissue, chronic in character, apt to be induced by very slight irritation, and its tendency is to degenerate.

The degeneration usually takes the form of caseation, with a tendency to resist absorption. It is as far reaching as the lymphatic system, and

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when once established as a diathesis there seems no limit to the possibilities of its dire influences. It is especially a disease of children, usually occurring between the years of three and fifteen, though it has been found earlier and later. Unlike tuberculosis, its inflammatory symptoms are usually attended with pain, which, fortunately for the little patient, is a danger signal that calls for prompt attention, and where this symptom occurs in the ear prompt and well-directed treatment should be met with gratifying results. Granting a scrofulous diathesis as a causative factor in diseases, we will return to the subject matter of our paper and consider how it is possible for it to exercise such a dire influence over aural disease.

Barring scrofulous disease of the bony structure in and about the ear, and those manifestations of eczema and ulceration at times on the auricles and in the meatus, we must look for the source of our trouble in the lymphatic and glandular tissue of the pharynx and post nasal cavity.

Since the report of the investigations of Meyer, of Copenhagen, in 1870, for it was by his persistent efforts that all scepticism was combated and today the full importance of inflammatory actions in these regions was recognized, the proper treatment of hypertrophied tonsils and adenoid growths bids fair to rob scrofula of its influence on diseases of the middle ear, and in a great measure on the general system, as with proper breathing the patient is in a better condition to withstand its ravages.

Catarrhal otitis media is generally due in children to an extension of the scrofulous inflammation of the throat and nose. It is a serious affection, as at any time it is apt to take on a speculative action and may lead to bony necrosis.

The late Birch Hirschfell says: "Scrofula is at the bottom of the largest number of cases in which weakening or destruction of the function of hearing have taken place during the age of childhood." There are others who believe that scarlatina and the other eruptive fevers of childhood may claim more victims. There is no doubt that many cases of aural trouble follow these diseases, but is not scrofula at the base of the trouble and the eruptive disease the irritation that starts the scrofulous inflammation into action? Their chronic character would further lead one to this conclusion. Of the diseases that are prone to follow scrofulous inflammation of the naso-pharynx, acute and chronic otitis media are the most frequent. The ultimate result of chronic catarrh is apt to be sclerosis.

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Acute otitis media has a marked tendency to degenerate into purulent inflammation of the middle ear, and subsequent invasion of the adjacent sinuses of the mastoid and temporal bones or necrosis of the petrous bone are familiar pictures to all who do special work.

I want to add that it is my belief that most of what I have to say in this paper so far has a greater bearing on the past than the future, for the influence of the tuberculous and scrofulous diathesis upon the ear should grow less and less with our better understanding of these diseases and our present methods of treatment.

The relation of the gouty diathesis to the ear offers a most interesting subject, but the limits of this paper will only allow mention of the most prominent symptoms. Those of you who desire to investigate the subject further will find that Buck, in his last edition, treats of the matter more fully than any of our text-books. It seems strange that in England, the so-called hot bed of gout, that its writers make but brief mention of its effect upon the ear. Wilde and Toynbee touch upon the subject; Wilde says that he has no doubt that a relationship exists, but he has never seen a case.

He then calls attention to Dr. Graves' description of gouty inflammation of the external ear. This is a state of congestion of the auricle, eczematous in character, which is now considered as one of the earliest symptoms of latent gout and usually subsides on the occurrence of the disease in other parts. This is considered the first authentic description of the relationship of gout to the ear. In my reading I find that Kramer, in his work on the ear, published in 1835, under the head of Inflammation from Metastasis, considers gout as one of the causes of bony necrosis in and about the ear, though he considers the whole subject as undecided. Toynbee says: "The poison of gout may also give rise to deafness and other peculiar symptoms in the head." He then by way of illustration cites a case that Buck says is the only typical case he can find recorded. Buck, on the other hand, cites many cases of both external and internal diseases that he considers to be of a gouty origin.

In one case he found the adjacent bony structure of the mastoid involved to such an extent that he at first thought it to be sarcoma. He also considers it the cause of most of the chronic catarrhal inflammations of the middle ear that tend to sclerosis, an opinion that is now being held by the advanced thinkers in our profession. Lenox Browne is a firm believer in the influence of gout in tonsillitis and other inflammatory diseases of the pharynx. Being so, it is easy to understand the possibility of aural inflammations. As a gouty or lithemic diathesis is

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apt to follow the sedentary habits so easily acquired by the wealthy, it behooves us here in the United States, where great fortunes seem to be acquired easily, to prepare ourselves in advance, to contend with the dire influence of these diatheses. But as an ounce of prevention is said to be worth a pound of cure, it will be well for us to sound the bell of warning and encourage in every way we can the modern fads of golf, yachting and all sports that tend to physical exercise, nature's own safeguard.

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THE INFLUENCE OF THE TUBERCULOUS, SCROFULOUS AND GOUTY DIATHESIS UPON THE NOSE AND THROAT.

BY THOMAS L. SHEARER, M. B., C. M., EDIN,

Baltimore, Md.

SOME years ago a young negro, who had spent all of his early life on a Virginia farm, came to Baltimore in search of other employment, and after many efforts succeeded in obtaining a position in a private family. Unfortunately for him there were in the household other servants, who did not hesitate when guilty of violating some rule, or of breaking glassware, furniture or anything else of value, to accuse him of it. James (for that was his name) was very good natured, and long suffering under these varied charges, all of which imputed to him an unusual degree of green country constitution. Finally patience ceased to be a virtue, and one day, in a moment of exasperation, he cried out: "Dat's it! everything on dis yere God's earth is blamed onter me!" Now, when one reads the medical articles of the present day, it seems as though the diathesis occupied about the same relation to disease that the poor chap bore to the household. How often do medical men, when upbraided by their patients for their failure to effect a cure in their particular complaints, answer them by saying that "you must expect a long, tedious treatment, because you are of a scrofulous or gouty habit, etc."

On reflection one naturally asks, what do we mean by a habit or diathesis? It is, in short, merely a special type of conformation, in which the tissues are more vulnerable and are therefore not only less able to resist general infection, but are, in each type, especially susceptible to the organisms of certain diseases. For a long time—since the days of Hippocrates—individuals possessing a certain habit of body and a peculiar facial appearance were considered as particularly predisposed to tuberculous or to scrofulous disease. Cohnheim, however, believes that in many cases the so-called habitus phthisicus is not an indication of a tendency to, but really an evidence of the *existence of*, tuberculosis.

Beneke has ascertained that in phthisical subjects, "the heart is relatively small, the arteries are proportionately narrow, and the *pulmonary artery* is relatively wider than the *aorta*. This point, he suggests, would

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lead to increase in the blood pressure in the lungs and favor catarrh." Galton and Mahomed, in studying the faces of phthisical people, observed two types of face, viz.:—

(a), The ovoid and narrow.

(b), The broad and coarse featured.

Strangely enough the first, with delicate skin, brilliant eyes, oval face and long, thin bones, corresponds to the old idea of the tuberculous diathesis; while the second, with thick lips and nose, opaque skin, large, thick bones and heavy figure, is apparently identical with the scrofulous diathesis. Fagge states, "that these conditions, upon which so much stress was formerly laid, indicate nothing more than delicacy of constitution, incomplete growth and imperfect development." The main point seems to be that the system is, so to speak, not in fighting trim when subjected to the attacks of disease, however slight. This diminished power of resistance is apparently stamped upon the tissue unit or cell and may be transmitted through a number of generations. When it is considered that catarrhal inflammation of the upper air passages and bronchial tubes lowers the local resistance or reduces the activity of the phagocytes, and thus permits the bacilli to pass into the tissues, some light is thrown upon the readiness with which certain people become infected with pulmonary tuberculosis. Strangely enough, although it is through the nasal passages that tubercle bacilli first gain access to the human body, tuberculosis of the nose is of very rare occurrence. The comparative immunity which the nose enjoys is doubtless owing to the fact that when the bacilli are deposited upon the membrane they are washed away by the natural secretion of the part; for, it remains to be shown that the nasal mucous membrane has any pow-r to cause their destruction in situ. It is probable that infection in this region occurs only when a breach of surface exists, by which the organisms reach the tissues and obtain a suitable soil for development. On the nasal septum near its anterior margin is a common seat of abrasion, and it is on this site where we are most apt to find the tuberculous process. Hajek* believes "that the ulcerative lesions in the noses of young children are more often indicative of a tuberculous disease than has hitherto been admitted."

Nasal tuberculosis usually accompanies a similar condition of some other organ. It begins insidiously, ordinarily as a single ulcer on the septum near the anterior margin, and from this region it may extend to

*International Klinische Rundschau, January, 1889.

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the nasal floor, or to the turbinated bodies, which then become swollen and covered with crusts. The ulcer is irregular in outline, round or ovoid in contour, its edges are uneven, with slight elevation, the floor is of a grayish yellow color and contains many caseous tubercles. It secretes a mucoid or muco-purulent discharge, which may be slightly bloody and more or less fetid. Pain is rarely present. There is no tendency towards healing, and if one does succeed in obtaining a cicatrix recurrence is rather apt to follow. In some instances nasal tuberculosis assumes a neoplastic form, which resembles, to a certain extent, a similar development which we encounter in the larynx. These tumors may be as large as a hazel nut; are irregular in outline, of reddish color, bleed easily, are soft and friable and ulcerate superficially quite easily. They are very vascular and contain miliary tubercles and tubercle bacilli. And now comes the question, what relation does the lymphatic temperament bear to the tuberculous or scrofulous diathesis? We meet frequently with cases whose lymphatic glands and different tonsils easily inflame or enlarge on slight irritation; this vulnerability would seem always to point to a scrofulous constitution, but comparatively modern views, as held by Myer, Bosworth and others, do not look upon this diathesis as a necessary factor in every instance. From recent observations of Dieulafoy and Lermoyez it is probable that, in a few cases at least, the tuberculous tendency may be considered as a predisposing cause of adenoids; but it is to be noted that the tuberculous process when present in this region, or in that of the faucial or lingual tonsils, is almost invariably latent, and when infection does take place it rarely travels beyond the neighboring lymphatics. It is also to be remarked "that the simple presence of giant cells, unaccompanied by bacilli, can not be accepted as proof of a tuberculosis, latent or active."* Sajous considers that a most important cause of adenoid growths is that "the liability to hypertrophic changes to which the faucial tonsils are susceptible in some persons exists also in the pharyngeal tonsil." Also, that "the inherent deficiency of recuperative powers peculiar to lymphatic glandular tissue being an important element in the pathology of this, as it is in simple chronic inflammation, the hypertrophic process is but the result of the continued hyperplasia." That most prevalent of diseases—chronic post-nasal catarrh or chronic naso-pharyngitis—has undoubtedly, in many cases, as a predisposing cause, a tuberculous or scrofulous dia-

*Lennox Browne, Dis. Throat and Nose.

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thesis. Nicoll,[1] of Glasgow, found that "cases of cervical tubercular glands constitute over 70 per cent. of the cases personally examined, and, with the addition of some instances of unilateral disease, in over 80 per cent. the exciting cause of the enlargement was found in the naso-pharynx. There seems ground for the belief that of naso-pharyngeal catarrhs a number are in their nature tuberculous." In rare instances tubercular deposits with ulceration are encountered on the pharynx itself, but I believe that the *scrofulous* diathesis, unless complicated by either syphilis or tuberculosis, does not manifest its presence in this neighborhood by ulceration. It is inclined to produce a slow but gradual inflammatory thickening of the naso-pharyngeal spaces of the fauces and nasal septum; the glands of the pharyngeal vault and the faucial tonsils undergo a similar change; the lymphatic glands of the region also become frequently affected in a corresponding manner, and sometimes undergo a softening process. When to this condition just described the local effects of the syphilitic poison are added, we would expect treatment based merely on antisyphilitic lines to be very satisfactory, because the primary constitutional weakness, which is responsible to a considerable extent for the hypertrophic changes in the parts, has not been recognized by us. While on the subject there is a point not only of great interest, but of practical importance, to which I would like to direct your attention. Dr. Spicer,[2] of London, observed a large black distended vein at the root of the nose as a striking physiognomical peculiarity in many children, especially the feebler offspring of the poorer classes in large towns. This vein—the nasal arch—forms a transverse communication between the angular on either side. Associated with this condition is a neglected or intractable chronic catarrh of the nose and pharynx, often with swollen middle turbinated bodies and nasal discharge; chronic congestion, hypertrophy of the post-nasal mucosa, or vault vegetations, are also present. As a sign of the diseased condition of the post-nasal space, this distended vein is of great importance. If neglected, venous congestion of the nasal mucosa leads to hypertrophic catarrh, nasal obstruction and its train of attendant evils. The scrofulous diathesis is, no doubt, at the bottom of this weak state of the nasal veins, and the cavernous spaces, the chronic engorgement being kept up through neurotic influences, which favor relaxation of the parts. The

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[1]Glasgow Med. Journal, January, 1896.

[2]Annual Univ. Med. Sciences, Vol. III., 1888.

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gouty diathesis, notwithstanding all of the researches of late years, still has in many particulars an air of deep mystery about its inner or true nature. With its general constitutional characteristics we are not concerned in this paper, which is necessarily limited to the discussion of the effects of gout upon the nose and throat. Morell Mackenzie[1] used to say that "gout was the last resource of destitute diagnosticians." Nevertheless, there can be no doubt that many cases of acute pharyngitis occur in gouty subjects, and that such attacks are at times much more obstinate in yielding to treatment than similar inflammations in non-gouty people.

Lennox Browne does not believe in the existence of a purely gouty sore throat, although he does recognize the fact that some cases of subacute pharyngitis, characterized by undue hyperæmia and great irritability of the mucous membrane, associated with eczema, especially of the auricle, are the danger signals of the gouto-rheumatic diathesis. Pain in the throat, intense congestion, with œdema of the uvula, or even of the entire soft palate, is a picture with which we often meet. Such a condition certainly is observed to occur more frequently in types of this diathesis than in persons whose history and other points would rather exclude the existence of such a tendency. In any event, on seeing such a throat, it is best to be on the lookout for lithæmic factors; for more speedy relief is the reward of such vigilance. Harrison Allen[2] mentions as a valuable, though not an essential, aid to diagnosis, the condition of the teeth. They are usually large, the antero-posterior diameter being especially exaggerated and the enamel of a yellowish color. These peculiarities of the teeth are confined to the incisors, canines and bicuspids. The crowns are often blunted and a disposition exists for recession of the gums from the teeth." In cases of rheumatic or gouty disease of long standing, I have often observed a naso-pharyngeal condition which is of a very annoying character. The mucous membrane of the nasal cavities presents a dry, glistening appearance, with, at times, an atrophic tendency; the naso-pharynx is affected in a similar manner and sometimes crusts or masses of half inspissated secretion are found in the nostrils, or on the posterior wall of the pharynx. Owing to the lack of moisture in the nose, the inspired air is unfitted for respiration and quite easily sets up an irritative state in the larynx and larger bronchi. The resulting cough is very troublesome. This rhinitis et pharyngitis sicca

[1]Madical News, Phila.

[2]Journal of Laryngol and Rhinology, page 314, 1888.

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also occurs in many other diseases which are of an exhausting nature. For some years it has been held by many writers that acute tonsillitis was often associated with, if not actually produced by, the rheumatic diathesis. Lennox Browne,[1] in 1878, brought forward this view, but of late he has modified it somewhat. He still believes that tonsillitis is at times rheumatic and more frequently gouty, but in a large proportion of cases, that such attacks are merely the result of contamination of the system by micro-organisms. Buschke, in particular, found that the tonsils acted as an entrance door for purulent micro-organisms, while other observers have noticed that many kinds of cocci and bacilli were present in inflammatory conditions of the tonsillar region. In other words, while the gouto-rheumatic diathesis reduces to a marked degree the systemic power to resist the attacks of organisms and their toxines upon the body, it also favors a congestive condition of the pharyngeal mucous membrane, including, of course, that which lines the tonsillar crypts. Once the organisms pass these little doors, it takes but a short time to enter the circulation and give rise to the symptoms (usually considered rheumatic), but which are in fact of a pyæmic nature. Such cases are prone to a severe prostration, intense aching in the back and limbs, headache, chilliness, high temperature—these manifestations of blood poisoning being out of all proportion to the amount of faucial disturbance. It is certainly a mistake to call such attacks rheumatism, as they are identical with instances in which infection unfortunately follows operations upon the nasal septum, or upon the naso-pharynx. Bronchitis and asthma are often present in gouty patients, but there seems to be a certain antagonism between gout and tuberculosis; at least, it has been asserted by many authors that tuberculous changes develop very slowly in gouty people.

Thus, Molliere[2] observed "that persons affected with gout rarely became tuberculous, and that some cases with tuberculosis have had that disease decidedly checked on the supervention of an attack of gout, because uric acid and the urates are antagonistic, not only to the pyogenic micro-organisms, but to the bacillus tuberculosis." Without attempting any explanation of this curious state of affairs, I may remark that I have, as yet, never encountered the combination of gout and tuberculosis in the same individual. To put then, in a few words, the general effect of the diathesis upon the nose and throat, one might say that the tuber-

[1]Diseases of Throat and Nose.

[2]Le Bull. Med., No. 18, 1888.

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culous tended to set up ulcerative states; the scrofulous, lymphoid hypertrophies—tonsillar and glandular; while, the gouty predisposed its possessor to pharyngeal hyperæmia, with uvular œdema; acute and often suppurative tonsillitis, and in cases of long duration atrophic states of the naso-pharyngeal mucous membrane with consequent distressing dryness of the parts. When, in any case, the evidence is sufficiently strong to suggest to our mind that a person is suffering from a certain diathesis, it is also most probable that a more careful examination of the patient will reveal the fact that it is with the disease itself—either latent or active—and not with a mere tendency that we are dealing. Failure to make this distinction has brought sorrow to many a household in the midst of which the dread tuberculosis stalked unobserved.

DISCUSSION.

Dr. E. B. Hooker: The phraseology of the title of this subject would lead one to believe that the nose, pharynx and larynx were all included within its scope, yet the writer, with evident forethought, omits all reference of the larynx. I assume, therefore, that it was the intention of the originators of this series of papers not to include the larynx in the group, perhaps because the influence of the tuberculous diathesis upon the larynx is much more frequently manifested, and therefore better known than upon the other regions. Be that as it may, I shall follow the course pursued by the writer and not touch upon the larynx.

Pathologically, I am enabled to discriminate between tuberculosis and scrofulosis. I regard scrofula as tuberculosis of the lymphatic glands. But not every instance of enlarged glands is by any means a manifestation of scrofula. It is exceedingly common in childhood for cervical and other glands to undergo a moderate hypertrophy, with no tendency to softening or ulceration. This may occur in children who are well nourished, well clothed and housed, who have plenty of fresh air and sunshine, and in whom there is no inheritance of tuberculosis. It passes away with youth and is in my opinion not a manifestation of scrofula. Of course such cases are far more likely to occur among children who are poorly nourished and whose hygienic environment is bad. Even with no hereditary taint I believe it possible under the adverse circumstances for such cases to become scrofulous—that is, tuberculous—and I would regard with suspicion any case in which the glandular hypertrophy persisted into adult life. While I cannot discriminate pathologically between tuberculosis and scrofula, there is a clinical difference between them, and we can therefore clinically assume the existence of two diatheses. From this point of view, I mean by scrofula a state of the system in which enlargements of the lymphatic glands occur, of slow development, with tendency to softening and ulceration. By the tuberculous diathesis, I mean a condition of the system which is particularly favorable to the cultivation of the bacillus tuberculosis in the lungs,

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which is hereditary in at least fifty per cent. of the cases affected, and in which there is an abnormal relation between the height, weight and chest capacity. Both diatheses have diminished power of resistance and both are poorly nourished; while the tuberculous individual is apt to be tall and thin, the scrofulous may be stout and fat, and superficially appear to be well nourished. This is not a scientific differentiation, for, in my opinion, there cannot be any such discrimination, but it will serve the purpose for which it is intended.

Now, having cleared the way for the question, we may ask, what is the influence of this tuberculous diathesis upon the nose and throat? I would reply that directly it has very little influence. I have never seen any tubercular ulceration of the nose, and it is known to be very rare. I have seen only a very few instances of tubercular ulceration of the throat (the larynx, of course, is not included), and it is not at all common. On this point I would take issue with the author of the paper under discussion. In summing up, he says—"the tuberculous tends to set up ulcerative states." This I believe to be an error, unless he means to include the larynx. Ulcers in the pharynx are rarely tuberculous—of course they occur, but they are not common. Syphilis is the great cause of ulceration in nose and pharynx and there are comparatively few cases of destructive ulceration in these regions that are not syphilitic.

Coming now to the influence of the scrofulous diathesis, I am heartily in accord with the author. Children and adults, but especially the former, are extremely liable to some form of nose and throat disease. They invariably catch cold very easily and are seldom free from some form of catarrh, which is rarely atrophic, but almost always hypertrophic. As might be supposed, an excessive amount of adenoid tissue and chronically enlarged tonsils are usually present. And I may say in passing that the sooner both vault and pharynx are cleaned out the better. But that is not the whole duty of the physician, important as it certainly is. The constitutional treament in these cases is of great importance and must not be neglected. In regard to atrophic conditions in these cases, I have observed quite frequently an atrophy of the nasal tissues, but it is not an atrophic catarrh. It occurs in those cases in which there is a large amount of adenoid tissue and there is practically no respiration through the nose. It is simply a shrinkage from disuse and disappears when normal respiration is restored.

In regard to the so-called gouty diathesis, I am not entirely clear, either as to what is meant in this connection by the gouty diathesis, or its relation to nose and throat disease. Strictly speaking, the gouty diathesis is one in which there is a tendency to excess of uric acid in the system, with inflammation of the small joints, most frequently the great toe, accompanied by deposition of urate of sodium. I have observed a connection, in rheumatic subjects, between tonsillitis and acute inflammatory rheumatism. In all the cases I have seen the tonsillitis preceded the rheumatism, which set in as the tonsillitis subsided, and was of an unusually severe and obstinate character. Such connection undoubtedly exists, but it is not very common. That is to say, it is, in my experience, de-

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cidedly exceptional for rheumatism to accompany tonsillitis, and I quite agree with Dr. Shearer that the fever, aching, prostration, etc., of such attacks cannot properly be attributed to a gouty or rheumatic character of the attack, but are the results of an infection by the micro-organisms producing the inflammation. I have observed in gouty subjects the same tendency, which he describes, to dryness and irritability of the mucous membrane of the nose and throat, a condition just opposite that which we find in scrofulous subjects. And it is my observation that rheumatic and gouty subjects are rarely tuberculous.

In conclusion, I should say that while the bacillus tuberculous finds a hospitable habitat, in those who are susceptible, in the lungs and larynx, and that while tubercular ulceration is common in those regions it is rare in the portion of the respiratory tract above the larynx, although the bacilli must pass over and find lodgment upon the tissues of these tracts before reaching the more susceptible regions below. And further, that the form of tubercular diathesis called scrofula renders its subjects particularly liable to hypertrophic catarrhs, with excess of secretion and hypertrophy of tonsils and adenoid, but with little tendency to ulceration. And finally, that the great majority of all cases of ulceration of the nose and throat (not malignant) are syphilitic in character.

Dr. C. G. Fellows: As we have three papers upon pathology, etc., cannot something be added as to the treatment of these cases, in reference to the gouty diathesis, especially its relation to the pharynx—whether the writer can give any special reference to the treatment, besides the systematic treatment? A day or two ago I had a case of pharyngitis corresponding to the one under discussion, which has come and gone for the last half dozen years. The most recent development is an enormous swelling of the sub-lingual glands, succeeding the gouty condition?

Dr. T. L. Shearer: You mean the treatment of the gouty condition?

Dr. C. G. Fellows: Yes. Whether there is any special treatment for the throat, more than the gouty condition.

Dr. T. L. Shearer: I always use, locally, if it is not too acute a condition a preparation of glycerine, iodine and iodide of potassium. But, naturally, I always depend on the condition of the urine, and in a lithæmic condition, especially the diet.

My principal reason for not including the larynx in this paper was, that the time limit would not allow me to do so; but also, the fact that all of our standard text-books enter so fully into the subject rendered a discussion of the laryngeal part of the field unnecessary. I naturally recognize the fact that *syphilis* is the cause of most of the cases of ulceration which we encounter in the pharynx, but, *when we do meet* with ulceration of a *tubercular type* in that region, it will be found to exhibit the characteristics described in the paper; at this time I have nothing to do with syphilis, but merely to confine myself to the three diatheses as under the title.

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ETIOLOGY OF LYMPHOID HYPERTROPHIES.

BY IRVING TOWNSEND, M. D.,

New York.

LYMPHOID *Hypertrophies* has been wisely selected as the *special subject* of a series of papers to be read and discussed at this meeting. The importance of this subject is only beginning to be realized, as witness the "recent address of the President of the British Medical Association, in which lymphoid hypertrophies were accorded equal prominence with the greatest medical topics of the day."

While it is particularly gratifying to have the privilege of introducing this subject, I feel incompetent to do it justice, or even fully outline it, within the limits of a brief theoretical essay.

The special subject includes all lymphoid enlargements in the throat and naso-pharynx, which, taken together, constitute the so-called "adenoid ring of Waldeyer." While the various structures composing this "ring" are subject to the same hereditary tendencies, their different locations predispose them to varying degrees of inflammation and infection, which are so often the exciting causes of hypertrophy. Owing to the many missing links in the etiological chain, and the difficulty in selecting from the maze of theory the essential factors, I find it impracticable to attempt their classification as *predisposing* and *exciting* causes. A general consideration of the more important causes would seem to be the best method of presenting the question, and I will adopt that plan.

In a preliminary review of the literature, I was impressed by the singular unanimity of opinion among writers upon this subject, as shown by their common use of the expression, "Etiology obscure." Further research convinced me that this term is still apropos and worthy of preservation, if only to stimulate future investigation in so promising a field.

Meyer, of Copenhagen, is entitled to the honor of having made the first systematic study of this subject, and his first essay, published in 1860 (in which a series of one hundred cases was analyzed), was the first important contribution to the literature. Modern research has added less to our knowledge of the etiology of lymphoid hypertrophy than to any other branch of the subject, and the traditional theories are reiter-

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ated by successive authors without many variations and with few important additions.

Although I am unable to disprove by clinical or other evidence the truth of certain time-honored theories, some of these are open to criticism because inconsistent with clinical experience. *Heredity* and *local inflammatory action* may be regarded as the chief causes of lymphoid hypertrophy, but back of these are a myraid of constitutional and other conditions (congenital and acquired) of which they are often the expression or result. The hereditary predisposition has been credited to a taint of syphilis, scrofulosis, or tuberculosis, but there is not the least proof of this, except the tendency of these diseases to attack the lymphatic system, and cause glandular swellings. Furthermore, a large majority of cases of lymphoid hypertrophy have no general glandular involvement, although enlarged cervical glands are frequently coexistent with hypertrophied tonsils. Neither do the remedies that act so promptly in syphilis have any special influence on these growths. A family history of tuberculosis is not found in any larger percentage of cases than in those suffering from other forms of throat disease. Scrofula is so often the synonym for a condition due to congenital syphilis, or some form of glandular infection, that its influence is uncertain and impossible to estimate.

For these reasons I am convinced that the aforesaid diseases play a much smaller part in the etiology of lymphoid hypertrophy than is commonly believed.

Is it not more rational to attribute this proneness to lymphoid hypertrophy (which may be manifest in one or several members of a family) to the fact that parents endow their offspring with the same tissue defects they possess, as well as their physical and mental qualities and susceptibilities to certain diseases? This would seem a simple and reasonable explanation of the important but variable influence of heredity in the causation of these growths. Although many doubtful points remain unsolved, it will be a long step in advance, in my opinion, when we discard the theory that these hypertrophies are due to the inheritance of any specific disease.

Certain anatomical conformations of the nose and naso-pharynx—especially if lymphoid overgrowth coexists—may predispose one to a variety of complications arising from mechanical causes or due to infection directly, although heredity plays its part by providing suitable conditions or a favorable soil for their development.

If we exclude the diseases mentioned, it is apparent that heredity has still many claims to recognition as a potent etiological factor. Among

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these might be mentioned the predilection for excessive nutrition and overgrowth of this tissue, greater liability to inflammation, anatomical defects, organic weaknesses, and other conditions more remote and less easily identified.

As clinical observation has shown, these growths undergo no uniform metamorphoses, and tend to increase and diminish at different periods of life—although in a general way the location determines the time of maximum development, while the limits are infancy and old age. It has been a recent experience to find an infant of three months whose nasopharynx was filled with adenoid vegetation which had doubtless existed since birth. On the other hand, I have twice removed portions of the lingual tonsils in patients over seventy years of age.

The theory has been advanced by embryologists that these growths are due to an arrested fœtal development, and the fact that they usually disappear between puberty and adult life is cited as proof of their rudimentary character (Hardenburgh). Whether there is a scientific basis for this conclusion or not, my lack of knowledge of that subject renders me incompetent to judge. While these structures are histologically almost identical, it is necessary to consider certain distinctive points peculiar to each.

Hypertrophies of the faucial and pharyngeal tonsils are most likely to occur in young children, and after puberty they have a tendency to disappear gradually under favorable conditions; but they frequently persist until after middle age. The faucial tonsils are more exposed to inflammation and infections, owing to their being situated in the alimentary tract and easily accessible to a variety of disease germs, often present in the oral cavity. The tonsillar crypts and the pockets formed by adhesions between the tonsils and faucial pillars furnish lodgment for food and other irritating substances, whereby they become suitable culture fields for bacilli as well as a centre for distributing toxic materials, causing an hypertrophy to be indefinitely prolonged and the throat kept in a constant state of irritation. While this has only an indirect bearing upon my subject, its importance will justify the emphasis made.

Hypertrophy of the lingual tonsil, on the contrary, is usually observed in adults, and though sometimes present during childhood seldom requires any attention until later years. From observation of these cases, I am convinced that gastric derangement, rheumatism, and infection (either from the tonsillar crypts or direct) are frequent causes of lingual hypertrophy. The so-called *tubal tonsils* and the growths on the lateral pharyngeal walls and elsewhere are generally associated with an

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exuberant development of lymphoid tissue and are only important when their presence causes troublesome symptoms.

The exciting causes are less obscure and include the exanthematous diseases, influenza, catarrhal inflammations of adjacent mucous membranes, exposure to unsanitary conditions, dampness (particularly from melting snow), sudden changes of temperature, and diphtheria, or other infectious diseases. The enormously increased dangers to which a child with enlarged tonsils is exposed, in case diphtheria is contracted, is very evident and generally understood. The fact that these hypertrophied tissues, which are constantly more or less inflamed, offer an open door to infectious micro-organism, is well established. The streptococcus and staphylococcus pyogenes—or the bacilli of diphtheria and tuberculosis—may invade the lymphatic system through these structures, and the disastrous consequences liable to result are too well known to make further mention necessary.

Dr. A. Plottier, of Paris, in a published report of the diphtheria cases treated in the Hospital des Enfants Malades, Paris, France, stated that in over fifty per cent. of a series of thirty-eight fatal cases "adenoids" were more or less developed. These observations led him to believe that diphtheria frequently results from direct infection of the nasopharyngeal growths. If his conclusions are correct, they strongly justify him in emphasizing the importance of thorough examinations of suspicious cases and the early removal of hypertrophied tissue.

As various authorities estimate the proportion of children with adenoids to be from ten to twenty per cent. of the entire population below a certain age limit, the disproportion is largely confirmatory of Dr. Plottier's argument. It is an accepted theory among surgeons (at least some very representative men endorse it) that rheumatic fever or acute articular rheumatism is generally due to a specific infection, frequently introduced through the tonsils and of the nature of a general septicæmia.

The cervical adenitis, so often associated with infectious diseases (especially those attacking the tonsillar tissues), is doubtless due to infection through the medium of the crypts, in which cavities organic matter lodges and undergoes processes of fermentation and decay, producing toxins that find easy access to the adjacent lymphatic glands.

Primary tuberculosis of the tonsil is rare, and until last year I do not remember having seen a case that could positively be diagnosed as such. In this case the diagnosis is unquestionable and has been confirmed by several competent laryngologists.

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THE PATHOLOGY OF HYPERTROPHIED LYMPHOID TISSUE.

(With Microscopic Studies, by T. R. Griffith, M. D.)

BY GEORGE B. RICE, M. D.,

Boston, Mass.

AN eminent authority has recently remarked:[1] "That when tonsils can be demonstrated clinically, that they are pathological entities."

Almost all of the studies of this lymphoid tissue have been made admittedly from hypertrophied masses, and to my best knowledge and belief the small lymph nodes which exist in the normal healthy throat present no definite characteristic other than of homogeneous lymph structures which are also found extensively in various parts of the body.[2] They are simply interlaced connective tissue fibres, the interstices of which contain rounded granular, lymph corpuscles; so with the varied morbid constitutional dyscrasias, by the absorption of foreign, sometimes infectious material, and from perverted nutritive changes of inflammatory or other origin are produced the structures called tonsils.

This I think is the generally accepted theory, although[3] Kyle evidently is not in accord with this statement. He believes that the pharyngeal tonsil may be large and even lobulated, and still be a normal structure. Of the faucial tonsils, he says:[4] "It must be borne in mind, that in children the tonsils are normally large, and because the gland structures extend beyond the faucial pillars, is no necessary reason for thinking them pathological." This writer divides the hypertrophies of these tissues into four distinct varieties; a division which I have been unable to substantiate satisfactorily by the investigations of others, or by my own observations.

[5]Brown says: "The faucial tonsils may be described as a conglomeration of Peyer's patches," and he quotes Quain as authority for the size

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[1]Dr. Wright, N. Y. Med. Jr., April 7, 1900.

[2]Gray's Anatomy, Page 49.

[3]Diseases of the Nose and Throat, Kyle, Page, 354.

[4]Diseases of the Nose and Throat, Kyle, 380.

[5]Nose and Throat and their diseases. By Lennox Brown. Fifth edition.

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of the tonsils, viz., one-half inch in length, and one-third of an inch in thickness. We must admit, I think, that the normal lymph nodes have, or at least did have a function, but that this function must be entirely or in a measure lost by the tissue changes which occur in the process of hypertrophy. The statement is also admitted for the consideration of this society, that the hypertrophied tonsil, that is, when it can be demonstrated clinically, whether the cause of inflammatory processes or not, irrespective also of its mechanical interference with respiration, Eustachian air interchange, or action of muscles, is still a menace to health. Serious investigations of the histological pathology of the structures is of comparatively recent origin.

Frankel in 1895 made microscopical studies of acute tonsillitis. He found the changes to consist in increased emigration of leucocytes from the follicles into the crypts.

[6]Goodale in 1898 made histological examination of sixteen cases of acute tonsillitis. The specimens were taken from patients after from one day to two weeks from the onset of the disease. Four cases showed local foci of suppuration in the follicles. These cases gave a history of acute inflammatory symptoms, varying from four to six days, and in none was there evidence of a reparative process. In all cases diffuse proliferation of the lymphoid and tissue cells was present.

Particularly the cells of the mucous membrane showed active proliferation and exfoliation. Bacteria were occasionally found superficially in the epithelium lining the crypts. These were most abundant near the orifices lining the crypts, diminishing in numbers toward the base. The crypts were also filled with exfoliated epithelial cells, leucocytes, bacteria, and in some cases fibrin.[7] This writer also demonstrates that the faucial tonsils are capable of absorbing insoluble grains of carmine by means of an emulsion into the tonsillar lacunæ.

[8]Henderson has shown that absorption takes place when various powdered preparations are blown upon the pharyngeal and faucial tonsils.

[9]Wright claims that streptoccoci are absorbed when rubbed upon the surface of the tonsillar tissues of animals. Clinical evidences of the power of the tonsils to absorb infectious material are many,—thus F.

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[6]A contribution to the Histology of Acute Tonsillitis. Jour. of the Boston Society of Medical Science. Jan., 1900.

[7]Archives for Laryngology. Band VII. Page 90.

[8]Archives for Laryngology. Band VIII. Page 476.

[9]Dr. Wright, N. Y. Med. Jr. April 7, 1900.

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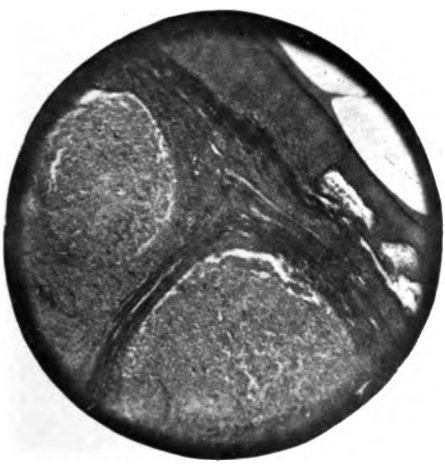

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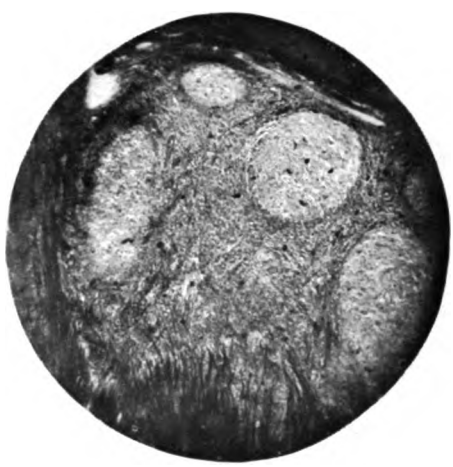

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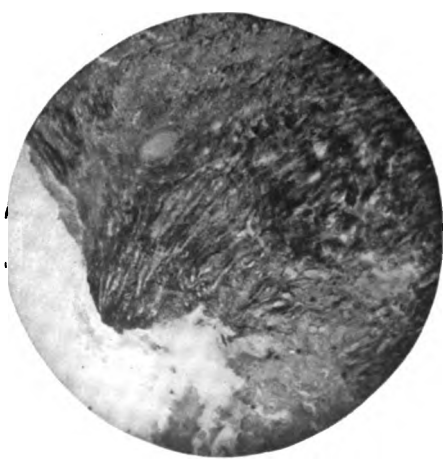

ILLUSTRATIONS OF DR. RICE'S PAPER.

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A. Packard[10] reports five cases of endocarditis, all of which were preceded by attacks of acute tonsillitis. In two of these cases the writer was certain that previous to the tonsillar inflammation the heart was sound.

Treitel has reported three cases of chronic tonsillar abscess followed by septic infection and death. Jessen emphasizes the fact, that tonsils with a normal appearance may yet contain a hidden focus of suppuration. In this connection of the powers of the tonsil to absorb infectious material, and to transmit the infection to the general organism, the subject of tuberculous infection and latent tuberculosis naturally arises.

[11]Walsham in thirty-four consecutive autopsies found the tonsils more or less tuberculous in twenty.

[12]Strassman's investigations demonstrate that the cervical lymphatics can be infected by the tubercle bacilli through the tonsils. The frequency of latent tuberculosis, as occurring in the pharyngeal tonsil, has been investigated by Dienlafoy,[13] who found tubercular adenoids in 20 per cent. of his cases. He reports that Brindel found them in 12.5 per cent., Gottstein in 12 per cent., Pfluder and Fischer in 15.6 per cent., McBride and Turner in 3 per cent., and Milligan in 16 per cent.

[14]Lewin found in two hundred cases evidence of tuberculosis in ten. He has also collected a total of nine hundred cases from different sources and finds evidence of latent tuberculosis in 5 per cent. This author states that the local disease can be easily destroyed by the removal of the pharyngeal tonsil even when co-existing with pulmonary tuberculosis. During the past year, I have from time to time submitted specimens of lingual, pharyngeal and faucial tonsils to Dr. T. R. Griffith for microscopical study. Dr. Griffith examined sixty or more slides and made microphotographs of twelve or more, which I take pleasure in showing, together with his report. All of the hypertrophied tonsils, he says, show more or less increase of fibrous connective tissue, and this feature is accompanied by alterations in the lymphoid tissue in such varying degrees that it is difficult to show with any accuracy the differentiating line and say definitely that the hypertrophy is due to one par-

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[10]Dr. Wright, N. Y. Med. Jr. June 24, 1900.
[11]London Lancet. June, 1898.
[12]Baltimore Med. Jour. May 13, 1898.
[13]International Med. Annal. Page 581.
[14]Archives for Laryngology. Band IX. Heft 3.

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ticular cause. It will be observed in slide No. 1, which is rather a low magnification of a lingual tonsil, that there is a marked increase in fibrous tissue, and that there is one prominent feature which I have found in almost all of the specimens studied: this is the regularity with which the fibres are arranged in bundles which divide the lymphoid tissue into areas, the sizes of which vary according to the amount of branching the main strands undergo. In slide No. 2, which is from a section of faucial tonsil, will be observed the beginning of a new fibrous bundle extending into the adenoid tissue. There does not seem to be a diffuse increase in the interstitial tissue so much as a primary formation of the bundles and a gradual extension from these, both by means of new fibrous bundles and of individual fibres. In slide 2, the most marked increase is in the sub-mucous connective tissue, and in slide No. 3, which is a section of lingual tonsil and more highly magnified, this point can be more closely noted. In all the slides thus far exhibited, the hyperplasia of fibrous tissue is accompanied by a corresponding hyperplasia of the lymphoid cells, which is plainly shown in slide No. 4, a section of linqual tonsil. This specimen has many interesting points. There is a great variation in the size of the follicles: there is not only the fascicular arrangements of the connective tissue fibres, but there is an extension all along the sides of the bundles, of individual fibres into the parenchyma, and that this would have eventually completely invaded the tonsil, is shown by the conditions at one end of this slide where the fibres are closely matted together, and in examining slide No. 5, which is a higher magnification of this place, it is easy to realize that sooner or later the parenchymal cells must be destroyed, for although the contraction may be slower in those cases accompanied by parenchymal hypertrophy than in those where the connective tissues increase is due to a replacing of necrosed material, it is in part because of the larger mass to compress, and possibly to some intrinsic influence which produces a condition analagous to the hypertrophic cirrhosis of the liver where there is an increase in fibrous tissue which does not contract. Just what directs the extension of the fibrous bundles from those which are clearly sub-mucus is not quite easy to determine, but probably they follow, more or less, the crypts and thus come to enclose areas or an easy path might be found along the lymph sinuses. Before leaving slide No. 5, it is of great interest to note the large size of the fibres. Not all of the tonsils examined exhibited the fascicular arrangement of fibrous tissue: there were those represented by slide No. 6, which shows the fibres arranged in a thick mass which radiates in a fan-like

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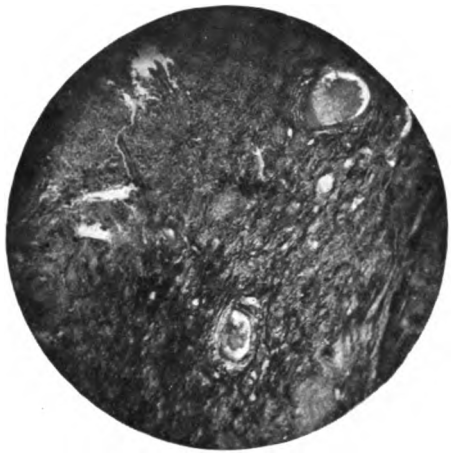

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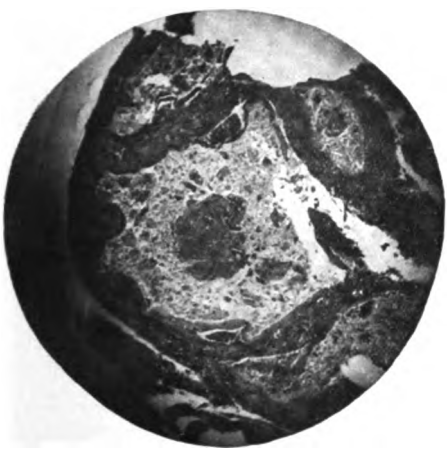

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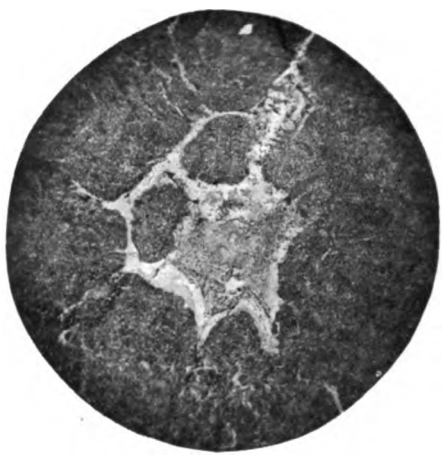

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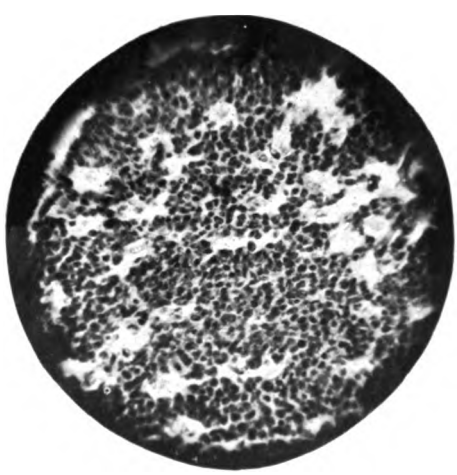

ILLUSTRATIONS OF DR. RICE'S PAPER.

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manner into the adjacent tissues, there becoming more diffuse, as shown in slide No. 7, and finally more or less disappearing.

The next slide, No. 8, from a faucial tonsil, is not unlike in appearance the last one, No. 7, but the specimen as a whole is very different. There is very little adenoid tissue, the most of that material being replaced by a large celled hyperplasia. The connective tissue is extensive and seemed to have no definite arrangement, but was scattered in irregular masses throughout the specimen. Previous to removal of this tonsil there was demonstrated the tubercular bacillus in a cheesy particle which had been evacuated from a tonsillar crypt, and later, in sections of the tonsil, the bacillus was again found, as far as I could observe, only in a crypt. The large celled hyperplasia is due to the tubercular infection. One or two giant cells were found and there were numerous cells showing mitosis. There were no miliary tubercles or areas of necrosis. The next slide, No. 9, a Luschka's tonsil, has much less fibrous tissue, but it is interesting because almost the whole tonsil is invaded by calcareous deposits which have filled the distended numerous crypts. In this slide is demonstrated one large deposit and several smaller ones. The tissue about the largest one has become purulent, probably due to an effort to discharge the offending foreign material.

Another Luschka's tonsil presents some very interesting features. The increase in connective tissue is moderately great: there is a large infiltration of epithelioid cells: areas where the blood-vessels are increased: the follicies are filled with large, multinucleated, pale, epithelioid cells: there is marked number of cells undergoing division, as many as nine mititic figures having been connected in one oil immersion field: there is extensive cell necrosis throughout the specimen as evidenced by marked karyolysis and chromolysis, and in parts are deposits of yellow pigment, the granules being both in the cells and intercellular.

In slide No. 10 is shown a dilated lymph sinus filled with pus cells and debris, and slide No. 11 is from the same specimen, showing the lymph sinus at one side and near the centre a follicle with clear spaces, which under a higher magnification are found to be occupied by the epithelioid cells previously spoken of. A highly magnified view of these cells is shown in slide No. 12, where the pale double nucleated cells are in sharp contrast to the more dense lymphoid cells.

Summary. Class 1. Where connective tissue hypertrophy is combined in varying degrees with hyperplasia of adenoid tissue. In this

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class the parenchymal inflammatory condition varies with extrinsic influences, but at each exacerbation the connective tissue is added to without a corresponding subsidence, and as it invades the parenchyma it impairs its function more and more until ultimately the tonsil may no longer be adenoid tissue, but a mass of fibrous tissue, whose density depends on the amount of contraction taken place.

2. Another class is where some influence has destroyed the parenchyma either diffusely or more circumscribedly. In this case the repair which takes place leaves areas of connective tissue which contracts more than does the fibrous tissue in case of class 1. The destruction may be by any infective processes or by any artificial means which would impair the integrity of the cells. Of course the inflammation in this class may stimulate a general hyperplasia of connective tissue.

3. Hypertrophy of tonsillar tissue may be caused by an infiltration of epithelioid cells, as in tubercular adenitis, and there be no increase of lymphoid cells; on the contrary a decrease due to necrosis, as is found in the last Luschka's tonsil considered, where there were evidences of extensive cell destruction, probably due both to pressure and to intoxication. Finally, the variety of the tonsil seemed to exert no influence on the form of hypertrophy, for the same conditions existed in the different varieties, were they lingual, faucial, or Luschka's tonsils. This ends Dr. Griffith's report.

I had hoped to give a short clinical history of each of the cases from which these specimens were taken, but found that in so doing I should exceed my time. From the conclusions arrived at and so well stated by Dr. Griffith, together with the reports recorded from other investigations, it would seem to me that we are justified in considering hypertrophied lymphoid tissue as a foreign growth, and as such, demanding removal. I believe this paper has also shown that the microscopical appearances of these hypertrophies does not always serve as a true guide in our estimate of the danger from this cause to the health of those patients who come under our care. Again, to repeat the statement made in the early part of this paper,—whatever may be the function of normal lymph nodes, that this function is in part, if not wholly, destroyed by the hypertrophic process.

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THE TREATMENT OF LYMPHOID HYPERTROPHIES.

BY GUSTAVE A. MUELLER, M. D.,

Pittsburg, Pa.

THE treatment of lymphoid hypertrophies is a subject which interests the laryngologist perhaps more than any other. This is not so much owing to the mysterious or complex nature of the lymphatic glandular system as to the fact that the greater portion of his work hinges to a very large degree on some morbid condition of the various glandular structures about the pharynx and naso-pharynx.

For all practical purposes we are most interested and concerned in the masses of lymphoid structure known as the naso-pharyngeal tonsil, the faucial tonsils, and the lingual tonsil.

I will not touch on the treatment of the morbid conditions of the smaller lymphoid masses in the ventricle of the larynx and those found in the submucosa of the nostrils.

The deleterious effect of the various lymphoid hypertrophies upon the general health and also on the special senses and functions, and the possibility of its bringing about undesirable anatomical changes in the bony structure is so familiar to all of us that it is not necessary to dwell upon the necessity of bringing about a return to the normal condition either by means of internal remedies, local applications, electricity or surgical interference. The subject of the treatment may then be directly approached.

Hypertrophy of the naso-pharyngeal or Luschka's tonsil is one of the most important and frequent conditions with which we have to deal. I believe that the most simple, most satisfactory treatment is the removal by surgical means as soon as the condition is diagnosed. I have no doubt, and know, that many remedies have a marked beneficial effect on the hypertrophy, but to effect any appreciable improvement involves what I believe to be a waste of time, during which the organs of special sense may become so affected as to leave pernicious results of a permanent nature, or at least so fix them that it is only by long, active, and persistent treatment that we can hope to derive any benefit. In the treatment of these conditions many prefer the use of the electro-cautery. With the assistance of the rhinoscopic mirror the cautery is applied to

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the hypertrophied mass at various points, with the result in many cases of bringing about an atrophy.

The finger nail is used as a curette and, like the cautery, may be useful in many cases where the mass is of a very soft, friable, spongy nature, but where there is a marked hyperplastic condition neither of these methods will prove of much avail, and a resort to the curette and adenoid forceps is preferable.

My own experience has led me to the use of the Gottstein curette, the Hartmann curette, and the forceps exclusively for the removal of adenoid masses in the naso-pharynx. I have found that in a series of over eight hundred of these cases, they have fulfilled every requirement to my satisfaction. The surgical removal of the mass has met every condition so thoroughly that I have not hesitated to employ it to the exclusion of everything else.

There is no desire on my part to depreciate the value of the remedy indicated, but I do believe that we subserve the best interests of the patient by first removing the mass, and then following with the remedy indicated, to correct the morbid condition of the glandular system.

Hypertrophy of the faucial tonsil, however, presents more difficulty and a greater variety of treatment to meet the varying conditions. The nature of the hypertrophy, the age of the patient, the condition of life, and many other things must guide us to a greater or less extent in the character of the treatment employed. The authorities are prone to classify the various hypertrophies according to some hard and fast rule, and yet we all of us in our daily experience meet with cases which obstinately refuse to be classified in this way, and which are to us the source of a great deal of annoyance and thought.

We will take up first the hypertrophied tonsil of a dense fibrous character in which the crypts do not seem to be enlarged, nor are they filled with any caseous secretion. Should there in these cases be no marked tendency to periodical inflammatory conditions, and do they not apparently act as an irritant to the surrounding structures, I believe that we are not warranted in surgically removing them, but should endeavor by the use of the proper constitutional remedy to bring about a return to the normal condition.

Should they, however, be so enlarged as by their bulk to interfere with the comfort of the patient, or mechanically act as an irritant to the surrounding structures, or should the crypts be filled with the characteristic secretion, or be so enlarged as to permit the introduction of food par-

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ticles, the tonsil, or at least that portion of it which is so honeycombed, should be removed.

In the spongy variety many employ the cautery, but my experience with the cautery has been so unsatisfactory in many cases, and has changed the soft, spongy variety into an hypertrophy of a more fibrous nature, has been the cause of so many inflammatory conditions, has brought about so many adhesions to the faucial pillars, has caused so much inconvenience and pain to the patient, that I have been led to discard this method almost entirely, and my subsequent experience has impressed me most forcibly with the superiority of the knife.

In the irregular shaped masses and the broad hypertrophies with flattened top we must often be content with removing the projecting portions, and this is frequently sufficient to bring relief from the distressing symptoms which they at times occasion.

In all of these varieties we are frequently confronted by an additional difficulty, the adhesion of the hypertrophied mass to the faucial pillars, and this adhesion is the cause in most of the cases of most of the distressing irritation. The removal of a portion of the tonsil or the reduction of the hypertrophied mass by use of the cautery or knife will bring no relief until the tonsil has been carefully dissected away from the pillars. This may seem to the uninitiated to be a very simple proceedure, but to me the dissection of these adhesions has on many occasions presented many difficulties, but, when thoroughly and efficiently done, the relief afforded has amply repaid all effort. In the spongy variety of hypertrophy the local application of tannin, hydrastis and various other astringents has been recommended by many, but the only local application from which I have been able to observe any decided benefit has been the use of dilute hydrochloric acid. In the use of hydrochloric acid, however, we must be very careful to prevent its spread to the adjacent parts or healthy tissues.

I do not approve of the use of the electro-cautery snare, as subsequent to the operation we have not only the ordinary wound to heal, but a burn as well. Where we have reason to fear profuse hæmorrhage I deem the cold snare the better instrument to use.

Hyperplasia or hypertrophy of the lingual tonsil, though said by many authors to be comparatively rare, is in my experience a condition with which we frequently meet.

While ordinarily, unless the hypertrophy be pronounced, it occasions little inconvenience, yet oft times it becomes a source of much trouble

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not only through the constriction of the pharynx, which it frequently causes, but it is often the cause of distressing hacking coughs, and many times makes a marked change in the character of the voice. In singers especially is this the case.

As the condition of the stomach and digestive tract is so prominently a factor in the causation of this condition, we can readily see that treatment directed toward the improvement in the digestive function must necessarily prove of service in the amelioration of this condition.

Where, however, we have true hyperplasia or hypertrophy with firmly organized structure, the reduction of the hypertrophy by other means becomes necessary. It is here that we derive our best results from the cautery in lymphoid hypertrophies. It is not necessary to apply the cautery heriocally. A slight cauterization of these hypertrophied masses is usually sufficient to bring about the desired result. In these cases, too, dilute hydrochloric acid, carefully applied, is productive of much good.

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INFLAMMATION OF THE LINGUAL TONSIL.

BY E. D. BROOKS, M. D.,

Ann Arbor, Mich.

RECENTLY my attention has been attracted to the large number of cases of pharyngitis applying for treatment, in which the lingual tonsil was involved, as well as by the number and variety of distressing symptoms presented and the readiness with which the inflammation yielded to treatment.

Although I have only my memory to draw from for statistics, I think it would be safe to say that one-third of my cases of pharyngitis, for the first three months of 1900, have presented this complication. Probably many such cases are not diagnosed, as the part in question can not be seen without the aid of the laryngoscope, and the symptoms arising from its inflammation are often referred to other organs, thus throwing one off the scent; hence, the advisability of examining the base of the tongue in our pharyngeal cases.

On inspection, the lingual tonsil, in health, corresponds, in color and general appearance, with the tongue itself, so a diagnosis is easily made, simply noting its color being sufficient to determine whether it is healthy or not. When inflamed it is always reddened, varying in degree and extent with the severity of the attack; some cases presenting only a small, smooth, red patch, while others have the whole base of the tongue included in the inflammatory process, resembling a piece of raw beef.

There is no lack of subjective symptoms, some of which are referable to the diseased part, but the majority to other, often remote structures.

Locally there is frequently a sensation of a sharp, foreign body pressed into the base of the tongue, causing coughing, hacking and scraping to dislodge the supposed offending substance, often accompanied by spasm of the glottis, lachrymation, aphonia, dyspnœa, dysphagia, etc. This train of symptoms is especially liable to be started by vinegar or other acids or condiments coming in contact with the inflamed surface in eating or drinking; also, by sharp particles of food, an accumulation of mucus, or by the part becoming dry, as in breathing through the mouth or in speaking or singing. Apparently, the great majority of those who are thus afflicted are voice-users, the percentage being esti-

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mated as high as 90, by one writer, though in my experience no such figures would be reached. Not all who are thus afflicted apply for treatment, and a careful examination of the lingual tonsil in all catarrhal patients might reveal a surprising number having inflammation of that organ. Undoubtedly, an improper use of the voice, either by overuse or misuse, is a frequent cause of the malady, as is also the use of highly-seasoned foods, tobacco and the stronger alcoholics, and the correction of any such vicious habit must constitute an important item in the treatment.

Newcomb, of New York, thinks the condition not a serious one, and, in a simple, uncomplicated case, of recent origin, that may be true. In complicated cases, however, it is often difficult to determine whether the tonsillar inflammation is the cause or the sequence of the complication. I recall a case, in which a chronic bronchitis, with asthma of very distressing severity, emaciation, night-sweats, anæmia, anorexia and asthenia, persisted until the discovery and treatment of a lingual tonsillitis checked the progress of the disease, and brought about a restoration to a fair degree of health, considering the fact that the patient was sixty years old and badly run down. My conviction that the lingual tonsil was at fault was strengthened by subsequent developments in the same case, when the same train of symptoms, in a lesser degree of severity, would recur, and be controlled by a similar line of treatment. Numerous cases of spasmodic cough have yielded readily to treatment of this organ, but whether the cough was primary and the lingual tonsillitis secondary, or the reverse, is still a matter of investigation.

I recall the case of an old lady who was so afflicted with spasm of the larynx that she could neither eat nor sleep with any comfort, being awakened several times every night by strangling and suffocation, and in constant fear of choking when swallowing food or drink, whose life was a burden because of this constant dread, emaciation and debility being marked, and whose physician had warned the family that the end was not far off, who recovered rapidly and completely from all her ailments, under treatment of the lingual tonsil, and is today, two years later, in excellent health.

While chronic inflammation of this organ may be practically limited to subjects at the middle period of life, or later, as suggested by Newcomb, it is the writer's observation that young adults are frequently subject to acute attacks. Especially is this true of voice-users, in whom it produces a huskiness and a lack of that resiliency so desirable in the singing voice. The effort such a person must put forth to produce the

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overtones which render the voice musical is such that the throat soon tires, and that peculiar, sombre quality is the result, such as we hear in those who make throaty tones. Such a voice is treacherous, and apt to break into a falsetto, if in a male, or to have a senile quality "with a string in it" if in a female subject, either of which effects is ruinous to the reputation of the singer.

Many patients having lingual tonsillitis are neurotics, and such are often fearful that the disease will develop into cancer, and we are under the necessity of assuring them over and over again that there is little or no danger of such an outcome if the disease is properly cared for. This fear is more certain to be awakened if the disease has continued a sufficient length of time to produce varicosities which are apparent to the patient.

It has not been my good fortune to recognize this disease as the causative factor in any case of spasm of the œsophagus or of globus hystericus, though such cases are mentioned, and one can readily see, from its anatomical relations and nerve supply, how such cases could occur, more especially in neurotics.

Since the lingual tonsil is composed of the same sort of tissue as the faucial tonsils, it is subject to the same varieties of inflammation as they, and amenable to the same modes of treatment, although, being hidden from direct view, one is necessitated to make his local applications, and do his operations, by the aid of a laryngeal mirror, and must have specially devised instruments to enable him to do satisfactory work.

One will do well, too, to remember that this organ is well supplied with sentient nerves, and that operations upon it are liable to be very painful, and to be followed by a very considerable reaction.

There is an exception to the statement that the same line of treatment that applies to inflammation of the faucial tonsils is serviceable here, and that is concerning local applications. My experience has been that they are of very little use in inflammation of the faucial tonsils, but are of decided value in inflammation of the lingual tonsil, so, after spraying the fauces with an alkaline solution, such as Dobell's or Seiler's, it is my practice to apply, by means of a bit of cotton, a mild astringent solution to the base of the tongue, taking good care to miss none of the inflamed surface. A 10 gr. solution of Zinc sulphate, a 3 per cent, solution of camphor-menthol in albolene, or a solution composed of Hamamelis ext. 2 dr., Hydrastic decolorized 1 dr., Glycerine 2 dr., with water sufficient to make 4 oz.; either of these, or, if one

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fails try another, I find to serve the purpose, after experimenting with various lotions for this effect.

It is essential to insist that the treatment be continued until the tonsil is restored to the same color as the surrounding tissues, to make sure of relieving the reflex disturbances. It may be necessary, in some cases, to empty the crypts if they are filled with detritus, as in cryptic inflammation.

Abscess of this part is more dangerous than that of the faucial tonsil, because of its proximity to the larynx, and the consequent danger of œdema of the glottis or the larynx, or of the abscess opening spontaneously during sleep and the entrance of pus and blood into the larynx, causing strangulation. The latter possibility emphasizes the necessity of an early evacuation of the abscess, as soon as fluctuation can be detected by the finger.

As for internal medication, one will seldom need to prescribe any other than the following: *Aconite, Belladonna, Mercurius* or *Pulsatilla,* according to well-known symptoms. However, any remedy that can cause inflammation of glandular tissue may be indicated, and must be administered according to their symptoms.

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THE REMOVAL OF THE TONSILS.

BY EDWARD BEECHER HOOKER, M. D.,

Hartford, Conn.

THE advisability of removing any organ depends upon the importance of its functions and the harm resulting from their cessation on one hand and the danger of allowing to remain a diseased organ or one which interferes with other functions on the other.

The functions of the tonsils have long been a matter of dispute and even yet are in doubt. The tonsil has the structure of both a secreting and lymphatic ductless organ. The crypts are lined with pavement epithelium and secrete a fluid which is of some value in moistening the food and preparing it for deglutition, even if it possess no digestive properties. This function is not of great importance, however. The follicles of the tonsils are similar in structure to those in the spleen, thyroid and other lymphatic glands, and it is not unreasonable to suppose that they have a use resembling that of these organs. The function of the spleen is now at least partially known. It is concerned in the formation of both white and red blood corpuscles and in the destruction of the latter and therefore profoundly affects nutrition. It is not advisable to remove it unless its continued presence in the body is a source of gravest danger.

The removal of the entire thyroid gland and annexa has a most disastrous effect on health and ultimately on life itself. The symptoms resemble those of myxœdema and consist of anæmia, loss of muscular power, failure of the mental faculties, abnormal dryness of the skin, loss of hair and peculiar swelling of the subcutaneous connective tissue. These phenomena indicate a serious interference with nutrition. Curiously enough if a small portion of the thyroid is allowed to remain these symptoms fail to appear. And if it be necessary to remove every portion of the thyroid and its appendages the evil effects can be warded off by feeding the fresh glands or injecting extracts made from it.

It is also a well established fact that if a small piece of healthy ovary be retained in case of removal of those organs the disagreeable symptoms ensuing on the sudden loss of function are mitigated and better

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health results than if every particle of ovarian tissue had been extirpated.

In other words conservative surgery seeks to interfere with the processes of the system as little as may be possible, while getting rid of diseased tissues and organs which threaten health and life.

There is a great variety of opinion regarding the roles which the tonsils play in the economy. The secretory function I have already alluded to and I believe it is relatively insignificant. It is held that the tonsil has power of absorption also, and that it takes up and saves the excess of saliva, particularly between the times of eating, and is therefore an organ of conservation. This is not improbable, but even so the function is relatively unimportant. Considering the lymphatic structure of the gland it is reasonable to suppose that it performs in some degree the office of all lymphatics wherever found and is therefore concerned in the formation of white blood corpuscles and consequently in nutrition. This view is held by many physiologists.

There is also a theory that the tonsils, both normal and hypertrophied, stand guard at the entrance of the pharynx to arrest germs of disease and destroy them. Against this is the widely accepted belief that diseased tonsils are on the contrary culture beds and that bacteria becoming entangled on their rough surface enter the crypts, proliferate there and thence find entrance into the system at large.

The most common form of disease of the tonsils necessitating removal is hypertrophy, and this is the only form I shall consider, since malignant disease is infrequent and I have never seen such a case myself.

Hypertrophy may be simple or hyperplastic. In the former the crypts are larger and deeper, the normal elements are increased in size and the blood-vessels are usually larger—a capacity therefore for increased function, whatever it is. In the hyperplastic form the organ is smoother and paler, there is an overgrowth of connective tissue and all the normal elements are compressed, the blood supply being diminished or almost cut off. This means decreased power of function, the gland approaching more nearly the condition of a useless obstructive mass of tissue. Some observers go so far as to say that the tonsil at its best is a retrograde organ and has no function whatever. It is certain that when hypertrophied the tonsils interfere with swallowing, change the quality of the voice, and render follicular tonsillitis and quinsy more common. If associated with adenoid vegetations or imperfect nasal respiration from any cause all the evil effects of mouth breathing are intensified (with possibly one exception), and we have

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all the too common effects of imperfect respiration, oxidation and nutrition. The one exception noted is this: I can conceive that in a mouth breather the enlarged tonsils, while interfering seriously with the passage of air through the fauces, might also act in a measure as the turbinated bodies do in the nose; that is, to collect the impurities in the air and prevent their entrance into the more sensitive region further on. An interesting query then would be, is the hypertrophy of the tonsils so frequently encountered in mouth breathers a protective measure set up by nature to compensate for the loss of the nose and therefore beneficial, or is it another expression of the tendency to glandular enlargement and therefore an accompanying evil? Another question might also be asked and the answer to this question will assist in the reply to the other. If the turbinated bodies act as receivers of the impurities in the air, why are they not more frequently the seat of such diseases as attack the tonsils? I believe that the difference in structure accounts for the difference in susceptibility, and that the smooth surfaces of the turbinates do not offer such opportunities for germ culture as do the crypts of the tonsils. And, therefore, that the hypertrophied tonsils, in mouth breathers especially, are a grave evil and the possible good they may do as arrestors of dust and other impurities is more than offset by their interference with respiration and their facility in affording to bacilli entrance into the system.

My conclusions thus far are therefore that while the tonsils are not wholly functionless and useless organs in their normal state, as many believe, their functions are not vital or important, and when lost, compensation is easily made by other organs possessing similar properties; that hypertrophied tonsils have so far lost their power of function by changes in their structure that their removal makes very little difference anyway in this regard; and that their removal, in a great majority of cases of true hypertrophy, is imperatively demanded.

The possibility of recurrence of hypertrophy after removal is an interesting question. There is a widespread belief among the laity that such recurrence is common and it must be admitted that it is frequent enough to be taken into account when an operation is advised. I believe, however, that it is very rare when the operation is thorough. If a portion of the tonsil is sliced off recurrence is not unlikely to occur. The tonsil is enveloped in a capsule which encloses it on all sides, except the mucous surface. The mere slicing off of the projection outside the capsule is of little avail. Whatever the instrument used it should get well around and behind the capsule.

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Not every case of hypertrophy should be operated upon. The enlargement should be of a permanent nature and of sufficient degree to interfere with deglutition, respiration or voice. It should at least project beyond the pillars of the fauces.

I have of late abandoned all other methods in favor of the snare, for the following reasons: the loop can be fashioned to accommodate any size and any shape of hypertrophy and consequently to thoroughly enucleate the tonsil; with the wire ecraseur there is no danger of hæmorrhage. With a proper instrument (such as Farlow's tonsil snare) of suitable strength there is no hypertrophy so tough that the wire will not easily cut through it, nor do I believe that the snare does harm by dragging on adjacent tissues. Hæmorrhage of any moment rarely occurs in children with any instrument, and in my experience is unknown with the snare. Hæmorrhage in adults after operation with the tonsillitome is not uncommon, it is exceedingly infrequent after use of the snare.

I should greatly like to hear the following points discussed:

Does any harm to nutrition occur through loss of function by the removal of the tonsils?

If so, would it be advisable to allow a portion of the organ to remain, as is done in thyroidectomy and ovariotomy?

Are hypertrophied tonsils a safeguard to the system or are they portals of injection?

Is hypertrophy likely to recur after removal of the tonsils?

DISCUSSION.

Dr. H. W. Hoyt: We can divide the etiology into two classes: the inherited and acquired. I am sure that some children are born with hypertrophied lymphoid tissue in the throat. As far as I have been able to determine such children have parents of a strumous diathesis. Such children have great difficulty in nursing and breathing at the same time, and are apt to have suppurating ears in infancy.

I believe there are at least two sources of acquired lymphoid hypertrophies.

Primarily it is because the other organs of the body, particularly the digestive, are not properly doing their work. If the child has difficulty in digesting his food there will be portal congestion, and reflexly the lymphoid tissue is required to do more work than it ought and the result is an hypertrophy. In a paper I read at Altantic City last year the burden of thought was that a large part of the trouble in the upper air tract was brought on by a disturbance in the digestive organs. The second source I believe is in chronic or frequent acute attacks of rhinitis.

In the paper on the lingual tonsil I heard nothing about varicose veins on the base of the tongue. I have found many such cases which are

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greatly relieved by the application of the cautery. They are often accompanied by some hypertrophied lymphoid tissue.

Whether we operate or use local treatment for hypertrophies in Waldyer's ring we must pay close attention to hygienic measures. If the skin, kidneys and digestive organs are in as perfect condition as possible we will find less trouble from return of adenoids, and, in some cases, may not need to operate.

Dr. C. S. Rumsey: While I do not find Drs. Rice and Griffith's papers contain any new facts, their method of original research is to be highly commended.

The faucial tonsil, the pharyngeal or Luschka tonsil, the lingual tonsil possess the same histological structure—a collection of lymph follicles and adenoid tissue held together in a loose fibrous network of connective tissue.

It is possible for germs to enter the blood through the respiratory and alimentary tract, as it is well known that following typhoid fever or pneumonia an osteo-myelitis may result, the source of disease being the typhoid bacillus or the pneumococcus.

Dr. Rice states that tonsils are the source of infection, giving illustration of the tubercular bacilli and streptococci. This is attributed, by my study of the subject, to the rarefaction of epithelium; that is, the epithelium is unequal in various places, which permit the absorption of bacteria and their ptomaines. We have, for example, acute articular rheumatism developing after the invasion of the throat.

I would ask the writers of this interesting paper, why do not more serious conditions arise as septicæmia and pyæmia, as this is a part of entry for all germs. I believe the tonsils offer an effective barrier to the entrance of bacteria into the deeper tissues, for healthy lymph adenoid tissue is capable of restraining the growth and virulence of micro-organisms. But where there is a cachexia, I believe this tissue is the first to lessen its resistance powers. And on the basis of healthy tissue and the individual, I advise tonsillotomy.

Therefore where there is a proliferation of connective tissue which invades the parenchyma, it must impair its function and becomes a mass of hypertrophied tissue, which is, as Dr. Rice states, a foreign body. The same is true where the parenchyma is destroyed by some influence and connective tissue takes its place, which contracts more than the fibrous tissues, or an infiltration of epitheliod cells as tubercular adenitis, causing by pressure or intoxication, destruction of lymphoid cells.

The treatment of these hypertrophies is removal. It establishes usual respiration, improvement of the general health, favorable influence on the intellectual faculties, disappearance of local diseases of the nose and pharynx—improvement of defects in speech—improvement of hearing, removal of a prolific cause of ear troubles.

On the other hand—I advise against the entire removal of healthy, large tonsils owing to their resisting property that belongs to healthy

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adenoid tissue. Besides, there is a natural disappearance of the pharyngeal tonsil in the first few years of life and the faucial tonsils at puberty.

I would like to direct your attention to that form of hypertrophy in which Dr. Mueller speaks of dissecting the tonsils from the pillars of the fauces. These do not occur so infrequently; but I think they are not recognized nearly as often as they should be. They are those which Dr. Robt. C. Myles calls "basic hypertrophies,"—the tissue in the base of the tonsil being the seat of the hypertrophy,—therefore it pushes the front or superficial portion of the tonsil forward, carrying the normal juncture of the tonsil and pillar with it.

A more careful examination for this variety should be made. When suspected, my habit is to make a digital examination of the palate just above and external to the edge of the anterior pillar, where frequently a hard lump will be recognized. I might remark just here that it is this form of hypertrophy which is most liable to affect the Eustachian tube, "not only by causing pressure," but also by interfering with the normal action of the levator palati muscles which open the middle third of the Eustachian tube each time it contracts.

Another statement in which I wish to agree with Dr. Mueller is,—that he has not been satisfied with the electro-cautery treatment of the tonsils. It is quite a widely used treatment, I know, and I remember when I commenced this work fifteen years ago it was at its height. I have studied those cases which I have cauterized myself and I have seen a number that others have cauterized, and it seems to me that although the tonsil has been diminished by frequent cauterization it is usually left in a rough,—sort of honeycombed,—condition which allows it to still continue to catch the food and allow it to decay in it, thereby still keeping up the frequent attacks of acute tonsillitis.

The point on which I wish to disagree with Dr. Mueller is where he speaks of a dense, fibrous tonsil or hypertrophy; that is, hypertrophy principally of cellular tissue or frame work,—in which he uses remedies with satisfactory results. My experience has been exactly the opposite. Where the glandular tissue is the principal seat of hypertrophy, I have seen the effects of homœopathic remedies, but where we have these hard tonsils, on palpation of which a sensation of gristle is imparted, there is nothing but cold steel that will do them any good.

Another point upon which I disagree with the doctor and agree with Dr. Hooker is one the more thorough ablation of the tonsil. I think Dr. Hooker said it was better to take out the whole tonsil. Is that right?

Dr. E. B. Hooker: That is my conclusion, yes.

Dr. A. W. Palmer: I read a paper on that two years ago at our county society in New York, and my ideas are these: The usual belief of the medical profession is that adenoids should be thoroughly removed, unless they return. The other point is that if a portion is sliced off the paryngeal tonsil the remainder would atrophy.

Again from a pathological standpoint adenoids and tonsils are almost identical. The question in my mind was: Why would the adenoids re-

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turn if they were not thoroughly removed? Why would the tonsils atrophy if they were partially removed? I could not get these two ideas to agree.

I have had twelve or thirteen cases of tonsillotomy the past year, where the tonsils had been removed in almost all cases by men whose ability I respect, but they only removed a portion of the tonsil. In one case I took out the largest pair of tonsils I ever saw in a girl, 12 years old, and they had been removed, as the mother told me, about two and a half years before. My conclusion from this was that the faucial tonsil should be as thoroughly removed as the Luschka's tonsil. I have been doing this for the last two years. There is a possibility, as Dr. Rice said, of the adenoid tissue recurring even when one leaves a very small amount of the glandular tissue.

In tonsillotomy, I do not rely upon the forks of the tonsillotome to raise the tonsil sufficiently between the blades; but after estimating from thorough examination how much tissue should be excised I place the guillotine over the tonsil and draw the gland forward into the blades with my tonsillar vulsellum forcep.

Then frequently there is a portion, especially in basic hypertrophies, which lies up between the pillars of the fauces, for the removal of which I have had made a special small angular bladed tonsillotome.

As Dr. Rice infers in his paper, I believe that hypertrophied tonsillar tissue is merely one manner in which some constitutional dyscrasia is manifested,— e. g.—scrofulosis, tuberculosis, etc. Therefore the ablation is only the commencement of the treatment. Personally, I always require, before operating, a promise of the patient that they will remain under my supervision for six or eight months.

They usually need, especially children, a plainer and more nutritive diet,—probably the addition of some hydro-carbon such as cod liver oil,—more fresh air and sun, light, and last, but not least, a constitutionally indicated homœopathic remedy.

Dr. J. B. Garrison: I am glad that Dr. Brooks has invited our attention to a condition which I have also demonstrated to exist in a very large proportion of individuals presenting themselves for treatment of any disease related to the respiratory tract and which, it seems to me, has not received by many operators the attention it deserves. In proof of this I might say that several patients with spasmodic cough have come under my observation, who had been previously seen by members of the profession who are deservedly noted for the careful attention they bestow upon their patients, who have, after the removal of hypertrophied lingual glands, been speedily relieved of the disturbing symptoms. One lady, the wife of a prominent physician, had coughed for two months and was losing weight and strength, and was having regular night sweats, which greatly alarmed her family and herself, as a tubercular condition was apprehended. Before I saw her she had been treated by three gentlemen fully capable of treating throat diseases, but without giving any relief. Upon examining the throat of the patient in question, I noted the enlarged glands and asked permission to operate for the re-

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moval. This was granted, and after an application of cocaine I amputated the lingual tonsils with the Myles' guillotine. The spasmodic condition of the cough ceased at once and in a week's time was altogether gone.

I have had some relief from treatment by local applications, but it has been my custom for some time to attempt a radical cure, using the Myles' guillotine in the manner just indicated.

If we will make it part of our routine to note the presence or absence of hypertrophies at the base of the tongue, the proportion of cases in which they are found to exist will, I think, be much greater than we have heretofore thought possible.

Dr. T. M. Strong: As to the points upon which the writer requested discussion, I would say that in my experience no harm had come to nutrition through removal of the tonsils. On the contrary, the benefit derived from the apparent restoration of the lost power of nutrition and assimiliation had been marked. Nor did he know of anything in our literature which gave any other results, so that this experience would seem to be universal.

Again the more thorough the removal of the diseased tonsil, the less the probability of failure to obtain the relief looked for. That tonsillar tissue may take on renewed development or other hyperplastic changes is a possibility we should bear in mind when giving a prognosis as to benefits to be derived from the removal of the hypertrophic condition. This renewal may follow after an apparent thorough removal of the tonsils, and several instances have been reported in recent literature, while partial removal, as witnessed in scores of cases, does not seem to have, of itself, such a tendency. The cause then is not determined and cannot be foreseen, as it is evident that the personal equation is an important factor. Personally he had not been called upon to operate on recurring tonsils on which he had operated, but had seen cases requiring operation where the history was one of previous removal. On the other hand he had operated several times on adenoid regrowths after apparent thorough removal at his hands.

Hypertrophied tonsils may unquestionably become portals of infection, as asserted by many experimenters, but he should doubt their being safeguards to the system, although as suggested by the writer they might be the least of two evils.

While tonsils which do not project beyond the pillars are probably harmless, as a rule, yet in a few instances he had seen relief follow removal, the irritative effects seeming to be due to a fibrous degeneration or hardening of the tissues.

Among the laity, and especially with many singers, there is a widespread objection to removal of the tonsils founded on a fear that it will injure the voice. In the light of the almost unanimous opinion on the part of the profession that only benefits follow the operation, when needed, it would be of interest to discover the source of this apprehension.

He believed the use of the snare would grow in favor, it being unquestionably the proper technique for adults. But the guillotine is so

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much easier to adjust and manipulate, and the resultant evils so slight to the average operator, that its use with the younger patients would undoubtedly continue to be the favored mode.

The recklessness with which thousands of tonsils have been hewn off by all sorts of operators make the absence of evil results a source of wonder when we consider the very serious results which occasionally follow this operation, and would seem to show that the protection lies rather in the field of operation itself than in the skill of the operator.

In another place in writing about the tonsils he had had occasion to say, that while the care of the tonsils might not be a difficult matter, they demanded a great deal more attention than is usually given them or it is thought they require.

Dr. G. M. Haywood: There are one or two things that the writer did not touch upon in regard to the removal of the lingual tonsil. I have had a little experience in the last few months in these cases, one of which was remarkable for the very size of the growth. A young theological student of our city came to me with the usual symptoms of hoarseness and fulness of the throat, etc., and I found that the base of the tongue was almost entirely covered. I removed seven pieces as large as the size of a pea, which nearly filled a two-drachm vial. It was simply marvelous, in my experience, to see such a large growth. I used Myles' lingual tonsillotome after using a 3-per cent. solution of eucaine, rubbing it in thoroughly with cotton on a probe, and then removed the tonsil without a particle of pain and with very slight hæmorrhage. There were no bad effects. The same week I had a young lady similarly affected with a large growth, causing a constant irritating cough with a great deal of hoarseness, which I removed the same way. The growth was not so large, but with the eucaine and Myles' tonsillotome it was removed at one sitting, with little pain and no bad effects afterwards. It was done more thoroughly and easier than it could have been removed with the electro-cautery.

Dr. T. L. Shearer: There was one peculiar thing that I happened to notice in a journal two days ago, a statement by Dr. E. C. Elliott, of Tennessee, in which he says: "The negro enjoys immunity from catarrhal inflammation, but is prone to tuberculosis and syphilis. Hypertrophy of the tonsils is rarely found; tonsillitis is uncommon, and adenoids do not occur in the negro."

I have observed also that a peculiarity of cough caused by enlargement of the lingual tonsil is that it sounds as if the patient were coughing suddenly and sharply into the bunghole of a barrel, as it has a strong resonance.

Dr. G. B. Rice: I would like to ask Dr. Hooker if, when using the snare, he does not find it necessary to separate the tonsil from the faucial pillars with a right-angle knife. I find this necessary almost always before using the Mackenzie tonsillotome, which instrument is my preference, and it seems to me that, if this preliminary dissection and separation is done thoroughly, the tonsillotome can be made to get pretty nearly

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to the base of the tonsillar tissue, and the operation be much less tedious than if the snare were used. Now, if there is any way to do away with this preliminary separation by using the snare, an object will be gained; otherwise, in the case of children, I wonder what is its advantage over the tonsillotome.

Dr. R. S. Copeland: There seems to be widespread skepticism concerning the value of the internal remedy in the treatment of enlarged tonsils. I confess to many failures in my own practice, and I suppose that is a common experience. However, I have been greatly interested in reading the discussion, which will appear in the bureau of Eye and Ear Diseases of the American Institute, by one of the best general practitioners in the country. He says that previous to the use of the remedies, which I will name directly, he always met cases of enlarged tonsils with "grief and perplexity," to use his words, but since prescribing *Tuberculinum* and *Bacillinum*, he receives these cases with pleasure. I have enough confidence in him to know that he would not make such a statement unless he had evidence to justify it.

He considers that enlarged tonsils are an evidence of incipient tuberculosis or a tendency to it, and invariably prescribes one of these remedies. The only indications given are these: *Tuberculinum* is indicated in dark-complexioned, swarthy individuals, while the *Bacillinum* is called for in fair-complexioned people. He prescribes it in the 200x. I shall take pleasure in testing this method of treatment, as it is much more comfortable than the surgical measures in use.

Dr. B. W. James: I have found that in those chronic cases *Baryta carbonica* has done me good service in a number of cases. Of course, in some of these old indurated tonsils we do not get so much good effect as in recent cases, but I have seen marked relief, and it is a remedy that in my experience will keep off this disposition to chronic inflammatory conditions of the tonsils and pharynx; the use of *Baryta carb.* being required but one, two or three weeks. The patient who is subject to fresh catarrhal colds and the tonsils being the seat of frequent inflammation attacks, by the continued use of this remedy for a little time will have that tendency removed. The remedy I think we ought to think of and use more frequently. It is a matter of individual experience with me and the benefit seems lasting.

Dr. H. W. Hoyt: What is the experience of those who use anti-toxin in regard to the disappearance of enlarged tonsils or adenoids after its use? In a report published not long ago by some one in New York who used anti-toxin very extensively, he said that in all cases of diphtheria where he used the anti-toxin he found afterwards on recovery that the tonsils and adenoids had disappeared, and that in a number of cases where he used anti-toxin as a preventive the tonsils and adenoids disappeared. If that is so it is a good thing.

Dr. E. L. Mann: It seems to me that Dr. Rice's paper has sounded the death-knell to the cautery in tonsil, as we can only expect from its use the destruction of lymphoid hypertrophy and increase in connective and scar tissue; and, if conversion of the tonsils into connective tissue makes

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them a foreign body, and, therefore, their removal necessary, we must give up the use of the cautery except for purely mechanical means. I was glad to hear Dr. Palmer speak of making more of tonsillotomy. The mere snipping off of the outside of the tonsil does very little good. On the other hand, it is almost impossible I think to remove an entire tonsil, although perhaps by the use of proper forceps to draw it in to the tonsillitome, we get off a great deal more ordinarily.

Another point in Dr. Rice's paper which was especially interesting was the fact we are not through with our adenoid cases after operating. Not that we should not operate, but that the cases require attention afterwards and that a return of the adenoid growth is not always a stigma upon the operator. His operation may have been as thorough as possible and yet the growth returned. The lingual tonsil and its examination are growing in importance. I have found the hypertrophy of it more frequent than mere congestion and consequently my success with astringents has been less marked than by operative measures. I have under observation now a case which seems so like one or two reported cases of extrathyroid on the base of the tongue that I am hesitating about operating upon it. We should bear in mind in working on the lingual tonsil, that such a thing is possible and recognize it before we become too radical in our treatment.

Dr. Irving Townsend: I am very much interested to hear such favorable opinions expressed regarding the cutting operation in preference to the cauterization and other methods of eradicating these growths. It seems to me, and it has long been my belief, that this is the true surgical procedure, as the use of the guillotine cutting forceps or knife leaves a clean surface which heals readily as a rule after the removal of a definite amount of tissue, whereas, from the use of the electro-cautery, you often have a sub-acute inflammation which lasts indefinitely, especially when applied to tissue in close contact with a cartilage or bone. Perichrondritis and periostitis are not only troublesome, but liable to cause so much increase of tissue as to defeat the purpose of the operation and render it a *partial success only* if not a complete failure.

In reference to the *total extirpation* of the faucial tonsils, I consider it to be impossible in a strict sense, but the term is appropriate if not interpreted too literally. Recurrence depends less upon the complete extirpation than upon the general tendency of the individual case to an exuberance of lymphoid overgrowth.

Dr. Hoyt speaks of lingual varices resulting from digestive disturbance. In my experience varices at the base of the tongue are observed more especially in cases where a sclerotic condition of the tonsil and other lymphoid tissue exists. On this account it is improbable that they result from a compression of the veins and interference with the return of the venous blood by fibrous bands that reduce the lumen of the blood-vessels and prevent the free outflow of the blood.

In reference to the danger of complete removal of the tonsil by the loss of function, I am confident that this is no argument against the operation

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when there is good reason for performing it. An hypertrophied tonsil is, as a rule, a diseased tonsil, and when the increase in connective tissue crowds out the true glandular structure, it becomes, in a large degree, foreign body. Whatever may have been its previous functional importance, it is now insignificant in comparison with the dangers that threaten one whose tonsils are enlarged, full of pockets or crypts, which afford the best possible field for the germs of infectious diseases.

A word in reference to Dr. Hooker's suggestion, regarding the use of the snare in preference to the guillotine in the removal of the faucial tonsils. I have used the snare only a few times and not with very much satisfaction, as I find in the tonsils I have to remove it is not the *size* but the adhesions and pockets that cause trouble. Many times a tonsil that does not project beyond the pillars is the seat of frequent inflammatory attacks and perhaps contains one or more deep crypts, which make its removal more imperative than as if it were several times as large and only an obstruction. In these cases the snare would be useless, and even the tonsillotome is often ineffectual, and the tissue has to be dissected out with scissors.

The enlarged cervical glands, so generally regarded as tuberculous (often correctly), are frequently due to infection, through the medium of *toxins* developed in the tonsillar crypts, either of a *specific* character, or simply the ordinary germs of septicæmia.

This is a subject that deserves our careful study, and I hope will receive more consideration in the near future.

Dr. G. B. Rice: I have very little to say. I simply want to speak of the necessity of treating the patient, not necessarily the hypertrophy of the tonsils, but treating the patient individually. We must realize our diversity of opinion regarding the ætiology of these growths.

We do not know what the causes of these hypertrophies are, and therefore we have no better means of controlling the development of hypertrophy, if the tendency exists, than the indicated homœopathic remedy; and I wish to ask you, members of this society, if you consider the two remedies just mentioned by one of our members—*Tuberculinum* and *Bacillinum*—homœopathic remedies, or remedies that are likely to be indicated. If not, why should we discuss them?

Now, we must realize that the simple removal of lymphoid tissue from the throat and naso-pharynx is not sufficient to cure the patient for all time. As I have just said, we must treat the patient afterwards. We must bring to our aid dietetic and hygienic measures, and correct abnormal constitutional tendencies, by giving the indicated remedy.

It is not always easy to follow our cases after operation, because they pass from our hands, but we can be particular to urge the necessity of these measures upon the general practitioner.

Dr. E. B. Hooker: I have been through a process of evolution with regard to the tonsils. I formerly believed that it was good practice to leave a small portion of the tonsillar tissue on the general principle which I have touched upon in my paper, that when an organ has a

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function and you remove that organ there is some advantage to the system in leaving a small portion of its tissue. I have entirely changed my opinion somewhat recently in that respect in regard to the tonsils. I now believe that if it is best to remove them at all, they should be removed as thoroughly as possible. Replying in this answer to the questions which I asked in my paper, I would say in regard to any loss of function, that loss of function has already occurred by changes in the tonsils which are hypertrophied, and if they ever had a function, that function has ceased. Therefore you are dealing with a foreign body. I believe the return of the hypertrophy, while not depending entirely on the thoroughness of the removal, is less likely to occur if the tonsil is thoroughly removed. There is an individual element, but I believe a thorough removal will be less likely to be followed by a return of hypertrophy than a partial removal.

Next, then as to the method of operation. I have found the tonsillotome rather unsatisfactory in adults, because of hæmorrhage, and also because it is somewhat difficult to determine just when the tonsil is pulled out far enough; in other words, that the peculiar motion of the instrument and the pulling which the operator does render it difficult to determine just where the amputation would occur. You depended very largely on the sense of sight. Now, I have depended in these operations (and of course in the vault of the pharynx) on the sense of touch, especially in children. I always etherize and place the child on his left side on the edge of the table, like this (indicating), and I very often do an adenoid and tonsillar operation at the same time. I do the tonsils first to give me more room, as bleeding does not make any difference. I put in a mouth gag, just as I do for the adenoids, and take out the tonsil on the lower side first. With my finger-nail I endeavor to go around the tonsil, much as you would with a knife when there are any adhesions. If you cannot push it forward, I pass a loop of catgut of silk through the tonsil and pull it forward myself or have an assistant do so. With my thumb and two fingers outlining the tonsil, as the gynæcologist outlines the uterus by his bimanual examination, I break up adhesions. I put a long wire loop over the tonsil, slip it down, get it over my fingers, and work it around until I feel it well behind the tonsil. As the loop tightens, if it is in the right position, it does not slip off, but on the contrary slips further inward and completely enucleates the tonsil. I have obtained better results by this method than by any other. You need a snare of greater strength than the ordinary one. Farlow's tonsil snare is a most excellent instrument. It is both a snare and an ecraseur.

Dr. T. M. Stewart: Do you turn fast or slow?

Dr. E. B. Hooker: Not very fast; perhaps I take a half minute. I have not happened to run across any cases since using the snare where there were adhesions between the tonsils and pillars which I could not work through with my fingers. I make two claims for the use of the snare: First, less danger of hæmorrhage; second, by sense of touch, greater ability to get the tonsil completely into the loop of the instrument, and, therefore, greater thoroughness in its removal.

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THE SIGNIFICANCE OF THE OTOSCOPIC PICTURE.

BY GEO. A SHEPARD, M. D.,

New York.

IN order to fully appreciate the value of the otoscopic picture, it is necessary that the normal ear should be clearly before us. So you will pardon me if I run briefly over the anatomy of the external and middle ear. The external canal is about three-quarters of an inch long, situated between the mastoid process and the condyle of the jaw. It passes upward, then slightly downward; and the general direction of the canal is inward and slightly forward. Its lumen is somewhat smaller in the middle than at either end. The inner portion of the superior wall of the canal forms the lateral wall of the attic, hiding from view the attic cells and heads of malleus and incus.

The external canal is one-third cartilaginous and two-thirds bony—the former is an inward prolongation of the auricle usually presenting two or more fissures (fissures of Santorini). These require to be borne in mind from the fact that pus occasionally finds its way through one of these fissures from a suppurating parotid to the meatus.

Perichondrium and periosteum line, respectively, the cartilage and bone of the canal and these, in turn, are lined with skin which also forms the external layer of the tympanic membrane. The skin contains hairs and sebaceous glands in the cartilaginous portion and ceruminous glands the entire length of the canal. The larger portion of the bony canal is developed from a separate center of ossification—the tympanic ring.

Within the tympanic ring is stretched the proper membrane, being attached to a groove on the internal margin. The membrana propria is composed of radial and circular fibers. Radial fibers pass from the manubrium to the periphery. Circular fibers, though rising from the ring, are most numerous midway between the manubrium and ring. All of these fibers are absent in the superior portion above the short process of the malleus, the drum head here being composed simply of skin and mucous membrane, hence the name—membrana flaccida.

At *all* periods of life the anterior-inferior part of the membrane is most distant from, while the posterior-superior is nearest to, the outer

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orifice of the auditory canal; but in infants the general position of the membrane is more nearly horizontal. The attachment to the malleus and the tension of the circular fibers cause an arching in of the membrane with the greatest concavity at the center. On inspection, the healthy membrane presents a pearly white, glistening, surface and is so translucent that the handle of the hammer can be seen running downward and backward to about the center, and just posterior to it is the long process of the incus. At the upper end of the handle is the short process which projects outward, carrying the membrane before it, forming an anterior and posterior fold, which constitutes the inferior limit of membrana flaccida. From the lower extremity of the handle the cone of light runs downward and forward. There are three elements which enter into the formation of the cone of light at the anterior and inferior portion of the membrane.

First—The shining cuticular layer.

Second—The funnel shape of the membrane.

Third—The double tilt of the membrane.

It is, of course, apparent that in order to obtain a reflex from this funnel-shaped membrane lying at the bottom of the external canal, the incident and reflected rays must almost coincide, therefore the reflex will appear only in that part of the membrane which is perpendicular to the axis of the canal. Now as the superior and posterior portions of the membrane are nearest the external orifice, the inferior and anterior portion will be most nearly perpendicular to the axis of the canal. It is of importance to understand the formation of the reflex in order to take full advantage of it as a diagnostic aid.

The middle ear is made up of tympanum, Eustachian tube and mastoid cells. The tympanum, with the ossicles and mastoid cells, are lined with mucous membrane, which also constitutes the periosteum of the bone; therefore a long continued suppurative inflammation of the mucous membrane always endangers the life of the bone. It is well to consider the tympanum as being divided into the tympanum proper and the attic, because disease frequently invades one and not the other; or, two different forms of inflammation may exist, one in the upper and one in the lower portion of the tympanum.

A case of chronic suppuration which came under my observation, some time ago, will illustrate the point I wish to make.

At first sight the tympanic membrane appeared normal, except for a round perforation in the lower and anterior quadrant, through which,

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however, the mucous membrane of the promontory appeared normal and no pus escaped. But on making a minute inspection, for the source of the suppuration, above and in the posterior portion of Shrapnell's membrane, a small perforation was discovered through which emerged a granulation and from which a continuous stream of pus flowed. Subsequent removal of the attic wall displayed the cause of the suppuration, viz., the fact that the cells and head of the hammer were carious.

Circumscribed inflammation presents a swelling in the outer third of the canal which may be difficult to differentiate, except by the history: First—from an abscess due to extension from a suppurating parotid through the fissures of Santorini, or, Second—from an extension of pus from the mastoid through a necrosis of the posterior wall—or, Third—from an abscess which sometimes points near the external meatus after burrowing along the superior wall of the canal from a suppurating attic.

Diffuse external otitis is closely related to circumscribed,—in fact the two conditions often run into one another. Diffuse inflammation, in its early stage, shows redness and swelling of the skin and in places the epidermis is loosened or even lost. The redness is usually most marked in the osseous part of the canal. The tympanic membrane looks red and swollen, not only losing its characteristic appearance, but also its line of definition from the external canal. Within a few days a discharge appears and the canal is found filled with masses of sodden epidermis. Owing to these accumulations, and to the swollen condition of the canal, it is difficult to obtain a good view of the deep parts. When the canal has been cleaned the cutis, denuded of its epidermis, presents a reddish granular surface. In the chronic stages the secretion is offensive. The inner portion of the wall may be covered with brownish crusts and dotted with granulations. The picture of this disease varies much with the cause. The most common causes are seborrhœa, eczema and an aspergillis. Seborrhœa is confined mostly to the cartilaginous canal and the deposit will appear to be made up of thin yellowish crusts. These crusts are easily detached, leaving the skin reddened, but not moist. In eczema the crusts are larger and thicker and are closely adherent. When detached the skin is left red and moist and, if dried with cotton, soon becomes covered with a thin serous exudate. These changes may affect the canal throughout its whole extent. There are three varieties of aspergillis found in the canal—white, yellow and black. They do not attach themselves to a previously healthy canal, nor will they thrive if a profuse purulent discharge is present. Most commonly there is a whitish or yellowish white deposit having the consistency of moist paper,

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closely adherent to the walls of the canal. These can sometimes be detached in sheets.

If aspergillis niger is present the deposit looks like a thin coating of wax. A careful examination may disclose the fibers of the fungus in little groups with the spore bearing heads in profile against the walls of the meatus. When the deposit is removed the skin is left red and tender. The diagnosis of the desquamative form of inflammation will be based upon the presence in the deep meatus, of the whitish mass composed chiefly of macerated epidermis. This mass is easily penetrated with the curette, but it is with great difficulty removed completely. In the more serious forms of this disease periostitis of the canal may ensue and it becomes necessary to differentiate from periostitis following disease of the mastoid cells. We are aided in this by the history and by the knowledge that in mastoid disease the inflammation is in the inner portion of the canal, causing a sagging of the superior and posterior wall and usually a perforation can be detected in the membrana tympani.

Tubal catarrh or congestion of the mucous membrane of the Eustachian tube comes on during an attack of acute coryza, the patient often complaining only of a stuffy feeling in the ear. Vegetations in the naso-pharynx predispose to this affection. Swelling of the mucous membrane closes the lumen of the tube and the tympanum soon loses its air. Inspection reveals the drum membrane drawn inward toward the tympanic wall. The handle of the malleus is fore-shortened and the short process is unduly prominent. In some cases the retraction is so marked that it is impossible to see the shaft—it being hidden behind the short process. That portion of the membrane in front and below the handle appears increased in area. Its color and luster are normal, but the light reflex is either absent or irregular. The stretching to which the membrane is subjected causes it to appear thinner and more transparent so that the intra-tympanic structures can be seen. The inner wall of the tympanum shows no evidence of congestion. All the above signs disappear for a time when the tympanum is inflated.

In tubo-tympanic catarrh there is an extension of the congestion to the tympanum. The engorgement of the vessel supplying its mucous membrane leads to a general hyperæmia of the inner wall and, to a lesser extent, of the drum membrane itself. It must be noted that in this injection the individual vessels can be distinguished, whereas in acute catarrhal congestion there is diffuse redness merging gradually into the normal pearly white color of the membrane. The congestion may result

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in two conditions—either, one with the accumulation of mucous in the tympanic cavity or in a simple serous exudation from the over-charged vessels. Inspection reveals a picture which varies according to the conditions present, but the distinctive feature, as contrasted with simple tubal-catarrh, lies in the evidences of circulatory changes. The membrana tympani is of a pinkish-white color, due to the congested internal wall which acts as a red background. When, in addition to the injection along the handle and in the posterior-superior part of the membrane, *marked congestion* appears above the short process or in the lower and anterior portion of the membrane, suspect an early formation of pus. The membrane is retracted, the malleus is fore-shortened and the reflex absent or irregular, as in tubal catarrh. But if there is effusion from the congested vessels, a bulging of a yellowish tinge appears in its inferior segment, and the area of reflection increases and becomes abnormally bright. Not infrequently the level of the fluid is shown by a line across the membrane. If the fluid is thin, this line can be seen to change as the head is tilted backward or forward. After inflation, bubbles of air are visible through the membrane.

Acute Otitis Media.—In acute catarrhal otitis the inflammation is confined chiefly to the superficial layer of the lining membrane of the tympanum proper. The cavity is soon filled with a turbid fluid composed of mucous, serum and desquamated epithelial cells. The mucous layer of the membrana tympani becomes swollen and its superficial cells are exfoliated; this allows of infiltration of the fibrous layer which softens and gives way under increased pressure. In the early stages, inspection shows the whole membrane hyperæmic, but most markedly along the handle and in Shrapnell's membrane. There is usually some depression and the luster is diminished. Later the membrane becomes uniformly reddened and all landmarks, except the short process, disappear. When effusion takes place the whole membrane is forced out into the canal, most markedly above and posteriorly.

Perforation usually takes place in the lower and anterior segment.

Primary Acute Purulent Otitis usually involves the upper portion of the tympanic cavity, in contra-distinction to the acute catarrhal variety which affects the lower portion. In the first stages the folds of membrane in the vault of the tympanum become engorgd with blood and completely close the passage way between the attic and the tympanum proper. In this case the pus can find vent only through Shrapnell's membrane, or by burrowing along between the skin and bone of the superior wall of the canal, and possibly also affecting the mastoid

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cells. But more frequently the inflammatory products find their way down along the long process of the incus and infect the lower cavity of the tympanum. This theory of the course of infection is borne out by the fact that the perforation in the tympanic membrane is so often found posterior to the short process of the hammer at a point just below the incud-stapedial articulation. It is of the utmost importance that this disease be recognized in its early stages because it endangers life as well as hearing. Inspection, in the early stages will, as a rule, show only that part of the membrane above the short process to be involved. Here are evidences of intense congestion. A little later the membrana flaccida is pushed outward and sometimes projects downwards, partially covering the normal membrane below. The surface has a sodden appearance and complete lack of luster. Where the pus has drained into the lower portion of the tympanum the whole membrane bulges and the appearance does not differ much from that of acute catarrh, except that the surface looks more macerated. In rare cases, according to Von Troeltsch, the pus is confined in two or three little pouches formed by reduplications of mucous membrane extending from the head of the hammer to the anterior and posterior walls of the tympanum. As Shrapnell's membrane forms the external wall of these pouches the situation of the pus is evident to the eye.

Chronic Hypertrophic Catarrhal Otitis may follow acute catarrhal otitis or occur as an idiopathic affection. The pathological changes consist in a congestion of lining membrane of the tympanum and afterwards of a true hypertrophy. Structural changes also take place in the membrane and fibrous layer and, in the later stages, deposits of lime salts. The swelling of the mucous membrane of the Eustachian tube closes its lumen and depression of the drumhead follows. If this retraction is allowed to remain the tendon of the tensor-tympanic muscle becomes shortened and the ossicular ligaments and articulation distorted. Adhesions take place between the membrane and the internal wall. When the hypertrophic process changes to the hyperplastic, fibrous tissue is formed which, by contraction, increases the deformity. In this sclerotic stage labyrinthine complications are usually first noticed, due to the increased pressure and to interference with the circulation over the promontory. Some authorities claim that a crumpled appearance of Shrapnell's membrane indicates a beginning hyperplastic change. Inspection in the early stages reveals a moderate degree of depression of the membrana tympani, as shown by the fore-shortening of the manubrium and the prominence of the posterior fold. If the

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malleus, at the same time, is rotated on its long axis by the unequal tension of the intra-tympanic ligaments, a sharp edge of the shaft is presented and it appears narrower than normal. If this rotation takes place without depression, the manubrium appears abnormally wide. Careful study of the position of the short process tells us the direction of rotation and whether the increased tension lies in the anterior or posterior portion of the tympanum. Where the disease has existed for some time, Shrapnell's nembrane, which is composed only of skin and mucous membrane, appears abnormally thin and depressed and is adherent to the neck of the malleus.

In the more advanced stages the manubrium may be drawn to the anterior or posterior wall according to the distribution of the connective tissue. When displaced backward and inward a tense fold is often formed, running from the short process downward and backward toward the margin of the membrane. If auto-inflation has been practiced too frequently, the membrane becomes relaxed and, when retracted, it is so closely applied to the internal wall that intra-tympanic landmarks can be clearly discerned, and when inflated the posteror and superior segments are seen to bulge far out into the canal. When the membrane lies on the internal wall, cicatrices appear lighter in color than the surrounding membrane, but after inflation they appear darker. Calcareous deposits always have a slight area of normal membrane between themselves and the periphery. Their presence in the membrane indicates a bad prognosis. The striated or wrinkled appearance of the membrane, so often seen about a cicatrix, denotes atrophy of the membrana propria.

Chronic Hyperplastic Otitis may develop from the hypertrophic form or idiopathically. It depends upon interference with the trophic nerve supply and the changes are most marked about the oval and round windows.

When the process has been sclerotic from the beginning the physical signs are very slight. The retraction of the membrane is not marked and its luster is normal, but the slight manipulation of the auricle, or the presence of the speculum in the canal during examination, will cause a blush to come over the membrane, indicating sudden engorgement of the vessels of the promontory. This must be remembered as a very grave symptom in chronic catarrhal otitis, and not confused with the simple injection along the handle, which is so often seen.

Chronic Suppuration.—A careful study of the canal and membrane

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will often enable a satisfactory diagnosis and prognosis to be made in cases of chronic suppuration even at the first examination. It is a sad fact that very often the surgeon does not realize the true seriousness of the condition until after weeks or months of treatment. When the pus is very profuse, the canal quickly filling after being cleansed, it is an indication that the pus forming membrane is not limited to the tympanum proper, but that the attic and mastoid cells are also probably involved. Where it is extremely profuse and offensive there may be a cerebral abscess discharging through the canal. The position and shape of the perforation must be taken into consideration. If, in the extreme upper part of the membrane, the attic cells are involved; if in the posterior part of Shrapnell's membrane with a protruding granulation, probably the antrum is affected. If a perforation in the posterior part of the drum has a sharp angle pointing upwards it indicates strongly caries of the anvil. A similar angular perforation in the anterior and upper part of the membrane indicates caries of the hammer. Perforation, no matter how large, never extends to the bony wall, but always leaves a narrow rim of membrane, due to excessive thickness of the periphery of the membrana propria, unless there is disease of the tympanic ring itself, in which case they extend to the bone. The above indications are not, of course, hard and fast rules. When the mucous membrane of the tympanum is greatly swollen and, upon catheterization, a fold occludes the perforation, look upon the inflammation as serious.

This point was brought forcibly to my mind a few weeks ago. A young man presented himself in my clinic giving a history of suppuration from the left ear, of four weeks standing. The discharge was profuse from a small round perforation posterior to the manubrium. Inflation would force out pus at first and then the opening would be occluded by a fold of mucous membrane. In a few days the lower mastoid region showed swelling and sensitiveness. As this condition did not subside under antiphlogistic measures, I opened the mastoid and found extensive necrosis. The lateral sinus covered with granulations and a Bezold's perforation with infiltration of pus under the sterno-cleido mastoid muscle was present.

Among the more positive signs of involvement of the mastoid and the presence of necrosed bone in chronic suppuration are:

First—A slit-like canal, due to a sagging forward of the posterior and superior wall at its internal portion. This is caused by pyæmia of the antrum setting up periostitis at this point.

Second—Perforation in the posterior and superior portion of the

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membrane, through which granulations or cholesteotoma protrude and accompanied by profuse discharge.

Third—Granulations coming from above, which rapidly return after removal, usually arise from dead bone.

Fourth—The presence of a thin, brownish or bloody pus, offensive and excoriating, indicates necrosed bone and cholesteotoma. Cholesteotoma can only be formed where the products of suppuration have been pent up in a closed cavity, with resulting necrosis and absorption of bone.

Fifth—Denuded bone or a sequestrum at the bottom of the canal.

When the promontory is covered with granulations, or pus comes from the Eustachian tube, a radical operation will probably not cure the discharge, even though it removes the danger, owing to the fact that we cannot thoroughly clean the bone in these parts. It is my custom to advise the patient before operation of the probability of a long treatment following.

DISCUSSION.

Dr. G. W. McDowell: I would like to add the possibility of being mislead by a furuncle of the posterior superior wall of the canal. I have seen two or three cases where a furuncle in that position has presented almost all of the external signs of true inflammation of the mastoid, such as swelling of the mastoid region, bogginess of the region over the mastoid and a slit like narrowing of the canal, with apparent descent of the superior wall, but all the trouble cleared up by incision into the furuncle. In a few days inflammation of the mastoid disappeared and the patient was entirely well. The pain and other symptoms were almost identical with those of acute inflammation of the mastoid, and it is well to be on our guard.

It can be very easily differentiated by means of the probe, for in a case where there is a sinus leading from the mastoid down to the superior posterior wall, we can follow it up with the probe. In the case of a furuncle it will only go a short distance and not reach the bone.

Dr. E. D. Brooks: As a matter of curiosity I wish to report a case of peculiar setting of the membrana tympani in a patient of mine. It was set at an angle inward and forward of at least 45 degrees. The handle of the malleus was imperfectly seen. I looked at the ear several times, and inflated it before I discovered what the condition was.

Dr. G. A. Shepard: Dr. McDowell's remarks bring to my mind a case of double furuncle of the canal, which was present in a patient presenting at Dr. Norton's clinic at the New York Ophthalmic Hospital. There was marked swelling over the mastoid region, extending down the neck, causing the auricle to stand well out from the head. The patient had been suffering extreme pain for several days. It seemed to me that there must be present a periostitis, due to inflammation of the mastoid cells, but a few days' treatment proved that the inflammation was secondary to the furuncles in the canal.

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A BRIEF PAPER UPON THE CAUSES AND MEASUREMENT OF HETEROPHORIA.

BY HAROLD WILSON, M. D.,

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THE anomalies of the ocular muscles continue to furnish a fruitful field for investigation, and the literature upon the subject grows rapidly. Yet there is scarcely an aspect of either the pathology or the physiology of these structures which further research may not alter or enlarge. During the last two decades we have been gradually adopting a nomenclature which is no sooner a part of our working vocabulary, than we find it more or less inadequate and must seek to modify it. We discover that the word "heterophoria" and its congeners, although beautifully expressing certain anomalous tendencies of the ocular muscles, satisfy only the superficial or anatomical phenomena, and fail to express the equally important physiological factors. Of course we should not ask unreasonably much of a mere name, but it is unfortunate if the employment of an inadequate nomenclature lead us into restricted and incompetent views of the subject in question. It is not my intention to discuss this matter at length now, but a reference to it is important since the defects of our present nomenclature become somewhat conspicuous in considering the subject of this paper. Thus the term "exophoria" comprises some half-dozen or more conditions differing in anatomical or physiological character, and requiring more or less different treatment; and whereas the word is useful as indicating a single symptom or phenomenon common to the class, it lacks much in specific definiteness, and must be supplemented by additional phraseology. For this reason, I shall here make use of the nomenclature and classification of motor anomalies proposed by Duane, that of Stevens being reserved for what we may call "generic" classification.

Heterophoria or Superable Squint of any species may be due to the separate or combined effects of the (1) over-action or (2) under-action of

I. Individual or associated muscles of one eye, (structural or anatomical).

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II. Individual or associated nerve nuclei of one eye.
III. Convergence Center,
a, accommodative.
b, non-accommodative.
IV. Divergence Center.
V. Torsional Centers, (?)

To illustrate:

Exophoria is a superable divergent squint. It may be wholly or in part manifest or latent. It may arise from one or more of the following conditions:

A. Over-action of (1), one or more abductor muscles, (of one eye), due to structural or functional anomalies, (Muscular or myopathic exophoria), or (2), of the divergence center, (Divergence excess).

B. Under-action of (1), one or more adductor muscles, (of one eye), due to structural or functional anomalies, or (2), of the convergence center, (Convergence insufficiency), which may be (*a*), accommodative or (*b*), non-accommodative.

C. Two or more of the above causes acting together, as for example, convergence insufficiency with divergence excess.

In a similar manner we might outline the causes or conditions under which the other forms of heterophoria arise.

Such an analysis of causes is not exhaustive, but is of great practical utility, and is really indispensable to the proper application of surgical and optical methods of treatment. For example, if we find a case of esophoria to be due to accommodative convergence excess, we can probably cure it be means of appropriate convex glasses. Whereas, if it were due to under-action of the rectus externus muscle, we should advise tenotomy of the associated antagonist of the other eye, or an advancement of the weak muscle with or without a tenotomy of its antagonist in the same eye. Thus, when we have determined the anatomico-physiological causes of heterphoria, we derive at once the indications for treatment. But we cannot always make a diagnosis that is certain and complete. Our knowledge of physiological ocular movements is still defective in many important respects. We diagnosticate an "under-acting rectus externus muscle" and recommend an operation on the associated antagonist, yet I believe it can be shown that abduction (by which we mean rotation of the eyeball on a vertical axis outward) is seldom or never accomplished by the external rectus muscle acting alone, and that if it were, the rectus internus is not its perfect antagonist, so that its tenotomy could not therefore possibly furnish a perfect

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mechanical correction for the under-acting muscle. At the same time, it is true that the correction secured by such an operation may be clinically very satisfactory.

I shall assume, therefore, that the analysis of the causes of heterophoria, indicated above, is no more than a working classification, corresponding practically with our present knowledge of ocular movements, and like a railroad time-table, "subject to change without notice."

The Examination and Measurement of Heterophoria. The proper examination of any case of heterophoria is essential to its correct diagnosis and treatment. A complete examination should include,

A. The determination of the muscular "balance" both for distance and for one or more near-points,

1, In the primary position. 2, Looking to the right in the horizontal plane. 3, Looking to the left in the horizontal plane. 4, Looking up in the vertical plane. 5, Looking down in the vertical plane. 6, Looking obliquely to the right and up. 7, Looking obliquely to the right and down. 8, Looking obliquely to the left and up. 9, Looking obliquely to the left and down.

B. The "duction" of each eye in parallel movements, together with the character or quality of the motion. (Motor Field. Abduction, adduction, sursumduction, deorsumduction of each eye.)

C. The prism convergence and divergence.

D. The convergence near-point, central, right and left, with the range of convergence.

E. The "torsion" (distorsion, contorsion, cyclophoria), for far and near points, and in various areas of the motor field.

F. The refraction and accommodation.

Methods of Measurement. The muscular balance may be measured in several ways: 1, Screen test; 2, Parallax test, and 3, Von Graefe's test with its numerous modern variations. The details of these several methods are too well known to require description. The screen test is objective and useful only in the rough estimation of considerable defects. The parallax test is a very delicate one and capable of much accuracy, but requires rather more than average intelligence on the part of the patient, and the expenditure of considerable time on the part of the surgeon. In practice, some modification of the Von Graefe test is usually employed, and the heterophoria is measured by means of prisms or upon a fixed wall-scale. Various instrumental devices have been proposed, each having some special merit. The rotating prisms of Her-

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schel (often attributed to others) in combination with other devices are exceedingly convenient and save much time. As the result of numerous experiments at different times, I am satisfied that measurements within a small limit of error may be made by any one of the phorometric methods in ordinary use, and I cannot say that the results of one method are constantly higher or lower than those of any other, where the measurements are made with proper and equal care. The judgment of the patient is less taxed in observations with the Maddox rod than with the single displacing prism. Consecutive measurements with the same patient, of hyperphoria for instance, made with the double-prism and the rod, will sometimes show a higher amount by the latter than by the former test. The more dissimilar the image formed in each eye, the less disturbance is caused by the unconscious effort at binocular fusion, a factor always likely to lessen the accuracy of measurements. The wall-scale and arrow are convenient for coarse estimations. I have recently used a modification of the v. Graefe test which may be slightly novel and seems promising. On a distant black background is placed a white cross, the arms of which are ¼ in. wide and 15 inches long, and are respectively vertical and horizontal. In a line with the vertical arm, and at a proper distance below it, is placed a small light (diaphragmed gas

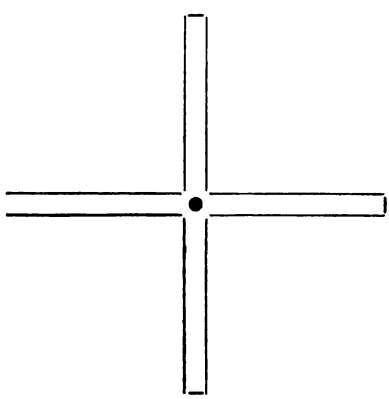

FIG. 1.

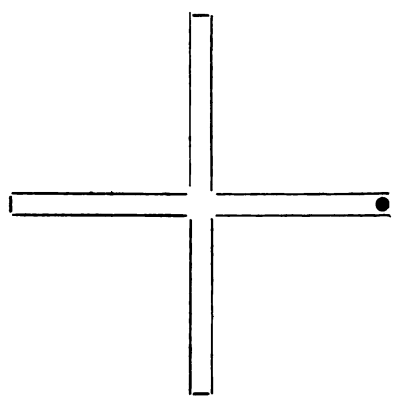

FIG. 2.

or electric). The patient observes the cross and light through a prism of 10 degrees base down before one eye. The light should be placed at such a distance below the center of the cross, that with an orthophoric patient its image through the prism will appear exactly at the center of the cross, as in Fig 1.

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A condition of heterophoria, when it exists, is shown at once, and its character made evident, by another position of these objects. Thus in Fig. 2,—the prism being placed over the right eye—we have a case of right hyper-esophoria, which can be measured by bringing the image of the light to coincide first with the horizontal arm of the cross, and then with its center, or in other words, by obtaining its prismatic co-ordinates with reference to the arms of the cross as co-ordinate axes. By employing a rotating prism (prism mobile) before the eye, one prism giving horizontal, the other vertical displacements, these two measurements may be made very rapidly, and if desired, even at the same time. A similar plan may be used for the test at near-point, using a small cross and a circle $^{3}/_{16}$ inch. in diameter as test objects. A special test-card with the appropriate distance between the centers of the cross and circle must be used for each separate distance at which the test is made. With the cross, as a test-object, determinations of torsion may be made, although for quantitative measurements, I think the rotating right-angled prisms of Helmholtz must be used. Various instruments for torsional estimations have been devised, each useful in a limited way, but none in general use for clinical purposes. In fact, the matter of torsion is at least clinically, a rather unknown and unexplored field, and not a little of such literature as has been put forth upon the subject is, to some degree, a hindrance rather than a help to its proper understanding.

The motor field of the eye may be measured by the perimeter, or by some form of tropometer, of which there are several. My own experience in the use of the Stevens Tropometer has not been such as to convince me of its practical usefulness, though I am not familiar with any better instrument for the same purpose, and as a matter of theory at least, the measurements it is intended to make are of much importance. I think that the ideal tropometer should be capable of accurate measurement within a limit of one degree of instrumental error.

Measurements of prism convergence and divergence are subject to wide variations, particularly the former, depending upon the acquirement by the patient of a certain "knack" or facility in the fusion of images. The use of the *prism mobile* assists in eliminating this error to a certain extent. The normal prism convergence is variously stated by different observers at from 25 to 70 degrees. The convergence near-point may be measured by Landolt's Ophthalmodynamometer, or by using a dot upon a white card as a test-object.

The measurement of the heterophoria itself is, then, by no means all

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that is necessary to establish the diagnosis and treatment in a case of superable squint. In fact, it is only a small part. Although we may often omit some of the steps indicated as part of a complete examination, I am inclined to believe that such an omission is seldom or never to the advantage of the patient, and may really result in the sacrifice of some important consideration in the treatment of the case. It is needless to say, perhaps, that the more thoroughly we diagnosticate and understand our cases, the more capable and satisfactory will be our treatment.

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THE NON-OPERATIVE TREATMENT OF HETEROPHORIA.

BY A. B. NORTON, M. D.,

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THE invitation to me to write upon this subject was, I presume, extended because it is generally known that I believe the large majority of the cases of heterophoria can be better treated by non-operative measures.

I shall endeavor in this paper to give, as briefly as possible, my own experience and methods of treating heterophoria and not tire you with a long *resume* of the various methods that from time to time have been suggested.

As a prelude to my subject I wish to state that my opinion has not been formed hurriedly or from an experience with but one method. My investigation into the subject of heterophoria commenced about fifteen years ago, and since that time I have seen in private practice over 7,000 different patients, and as we all know probably ninety-nine cases out of every hundred will show some degree of heterophoria.

My attention was especially directed to the muscles of the eye as a cause of asthenopia by a patient of the late Dr. C. Th. Liebold, who he said had been exercising his muscles with prisms with the greatest benefit. Following out this hint, I commenced the more careful study of the muscular balance of the eye and, when lost, its correction. At about this time Dr. Geo. T. Stevens commenced writing upon muscular disturbances, suggested the present nomenclature and advanced the method of correcting the same by graduated tenotomies. Being at the time deeply interested in the subject, I extended my investigations into its operative correction, and in 1887 commenced making graduated tenotomies for heterophoria and was, so far as I have been able to learn, the first one, in our school at least, to try the method advocated by Stevens. Since then I have operated a great many cases, and I believe that I can speak knowingly of both operative and non-operative measures. I believe that my results from operations have been more favorable than those of many operators, not from any greater skill of operating, but because, from previous work with prisms, I early determined the sphere of the knife.

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I know that I have seen many most brilliant results from a careful graduated tenotomy, or an advancement, in cases that I do not believe could have been relieved in any other way. I am convinced that the principle reasons operative measures have come into such general disrepute are, because prism exercise to strengthen the weakened muscle had not first been followed out, and the too rapid repetition of operations before the muscles have become adjusted to their new positions. We frequently hear of cases operated from twenty to thirty times, and I know of one case that had had seventy-four operations made upon the various muscles of the eyes. Three operations are the most that I have ever been compelled to make to relieve any case.

I wish to emphasize at this point, that in my opinion operative measures are of the utmost value when properly indicated, but that they are only indicated in a *very small* percentage of cases, and then *only* as the court of final appeal *after all other measures have been thoroughly tried.*

In the treatment of any disease, or condition, the first instruction to the student is to remove the cause, and while the causes of heterophoria are to be considered in another paper, it still seems wholly within the scope of my text to refer briefly to some of the causes in order to illustrate my method of treatment.

The first and in my opinion the most important cause of heterophoria is some refractive error. This I believe to be due to the effort of the extrinsic muscles of the eye to overcome the errors of refraction. We know, for example, that hyperopic patients will frequently hold objects near to the eyes to secure larger retinal images. This creates an increased convergence of the eyes and necessarily an extra demand upon the internal recti. If this extra impulse to convergence chances to come on very slowly when the patient is in good physical condition generally, we can conceive that the internal recti may gradually acquire additional power and finally become relatively stronger than its antagonistic muscle, the external, and the condition known as esophoria exists. On the other hand, supposing this additional convergence be brought into play when the patient is in a low physical condition, as when convalescing from some illness, we believe then the strain would result in still further weakening the internal recti, and we would have exophoria as the result. In this same way I believe the use of too strong convex lenses is one of the most frequent and potent causes of exophoria. The relation between convergence and accommodation is so intimate that it is claimed

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by some that both actions are governed by a single centre of inervation. We know that convergence is always associated with accommodation. The use of too strong convex lenses, which reduces the stimulus to accommodate, also reduces the incentive to convergence. Long continued non-use of the muscles of convergence results in a relative weakening of the power to converge, or exophoria.

The condition of exophoria I find to be far more frequently present than any other variety of heterophoria, and in my opinion is largely dependent upon the great tendency of patients when convalescing from some exhaustive illness to use the eyes for reading before the general muscular tone has been restored. We all know as a fact that patients when recovering from either a short or prolonged illness, in which all the vital forces have been more or less lowered pass the time, and usually with the consent of the physician, in reading or some other use of the eyes which requires prolonged action of the eye muscles, especially the internal recti. Such a patient is allowed, as a rule, to read for hours without restriction, while the physician would not for a moment permit the same patient to use the muscles of the legs in walking for but a fraction of the time. Then when you remember the relative strength of these delicate eye muscles as compared with the powerful leg muscles, it is easy to understand the great danger of weakening them by overuse, and as the result, exophoria.

At this place permit me to explain what I mean by exophoria. I claim that all cases complaining *only* of discomfort, inability to use the eyes, and asthenopic symptoms, *when employing the eyes at the near-point with exophoria in accommodation*, irrespective of what the muscular test may show at distance, are cases of exophoria. My rule is to treat the symptoms the patient complains of. Take, for example, such a case as we very frequently find, where the patient has, say esophoria, or hyperphoria, or both, at distance and exophoria in accommodation. In such a case suppose he only complains, as the majority do, of trouble on using the eyes at the near-point, we would classify this case as a case of exophoria, ignore the condition at distance vision and treat his exophoria. If on the contrary, he has headaches, etc., only when looking at distant objects, as in sight-seeing, visiting picture galleries, riding on the cars, etc., with no discomfort at near vision, we should call this esophoria, or hyperphoria, correct it and pay no attention to the exophoria at the near-point.

Another point in regard to the examination. The test of the muscular

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balance, in accommodation especially, should always be made *in the condition in which the eyes are used.* That is, if the patient wears glasses for near work the muscular balance in accommodation must be tested with those glasses on, because convex spherical lenses will always increase exophoria and decrease esophoria, while on the contrary concave lenses will decrease exophoria and increase esophoria. I would emphasize this point because it has proven a most valuable and practical point to me, in fitting near-vision glasses especially, and is one that I believe to be too generally overlooked or ignored. It is, therefore, my rule in the treatment of heterophoria to first carefully search for any refractive error along the following lines: All patients are first examined with the ophthalmometer and then with the trial lenses. Practically all cases showing astigmatism, hyperopia with esophoria, or the lower degrees of myopia when there is any suspicion of spasm of the accommodation, are then examined under atropine. It will be seen from this that atropine is used in a very large majority of all my cases. This is done that I may have a positive record and because the enforced rest of the accommodation while under the atropine I believe to be most serviceable. In passing, I would say that after having tried all the new mydriatics as they come out, I always return to atropine because more sure of my results than from any other mydriatic. From its use in thousands of cases I have never seen but one bad result, and in that there was no permanent injury.

The muscular equilibrium is then determined with the phorometer both for distant vision and in accommodation, testing at twenty feet and at eighteen inches, both with and without the glasses on the patient. In my offices the Harold Wilson Phorometer is used in preference to all others, because I believe it to be the most accurate and certainly the most convenient, relying upon the Maddox rod for the distant examination and the single prism test for the accommodation.

The ability to overcome prisms is then determined and recorded together with all the refractive and muscular tests.

Method of Treating Heterophoria. Let us now consider what I believe to be the best methods of treating the different forms of heterophoria.

First *Hyperphoria.* Prism exercise is to me the ideal method of correcting all muscular disturbances. In hyperphoria, however, my results have as a rule been unsatisfactory from prism exercise, because the normal power of the vertical acting muscles is slight and when lost it

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is a long, tedious process to restore it. If, however, faithfully persevered in I know that in many cases it can be done. As hyperphoria is seldom over 3°, and as the very large majority of these cases have refractive errors requiring the constant use of glasses, it is my usual custom to combine prisms with their lenses. In doing this it is my rule not to correct at first more than one-half or three-fourths of the amount with prisms. In many cases such a correction is permanent and they will wear it with entire relief for years. In other cases I find that in six months or a year the patient returns with a little higher degree and a stronger prism is prescribed. In still other cases (but few) they will return with no hyperphoria and the prism can be taken off.

If the hyperphoric patient has no refractive error requiring the constant use of glasses, I usually have him wear the correcting prism for a few weeks, long enough to demonstrate by the relief of his symptoms that they result from hyperphoria, and then give him the choice as to whether he will follow out prism exercise to cure the trouble, wear prismatic glasses for its correction or undergo operative measures. In all cases where the hyperphoria is of six or more degrees tenotomy is usually resorted to after correcting prisms have been worn long enough to prove the relief, because the constant wearing of prisms of this degree is not usually well borne.

In Esophoria when associated with hyperopia we can usually correct the muscular trouble by the strength of the glass prescribed for the refractive error. Remembering that convex lenses decrease esophoria, examine the muscles, with your patient's glasses on, and strengthen or weaken them to bring the eyes, in the condition in which they are to be used, i. e., with their glasses on, to orthophoria, or as near that as possible. If you cannot give orthophoria with glasses compatible with good vision you can then correct the remaining esophoria, as a rule, by decentering the lenses or combining prisms. If the amount of esophoria is so excessive that sufficiently strong prismatic glasses giving practically orthophoria cannot be worn with comfort there then remains usually nothing but operative measures. Prism exercise in esophoria has been unsatisfactory to me for the same reasons as in hyperphoria, it is too tedious a process and in a great many cases not sufficient results are obtained even though faithfully followed out.

In Exophoria we can on the contrary get most gratifying results from prism exercise when properly carried out. The internal rectus is normally the most powerful of all the ocular muscles and seems to be more

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under the control of the will than any of the others. As I have already said, I believe exophoria, or insufficiency of the internal recti muscles, to form a very large percentage of all the cases of heterphoria *causing trouble.* Furthermore it is extremely rare for me to find a case of exophoria in which I cannot relieve my patient's symptoms by prism exercise. There are to be sure quite a large number of cases of exophoria in accommodation in which I am unable to get orthophoria from prism exercise, but in these you can nearly always *relieve their symptoms,* and that is all the patient cares for, or that I strive for. If I can cure his symptoms I am satisfied, regardless of the reading of my phorometer. I have seen a number of patients in which my examinations showed very high degrees of heterophoria of various kinds whom I have advised to pay no attention to their muscular disturbance. Why? Because they have had absolutely no symptom of any discomfort whatever, either immediate or remote, and my advice to them is to let well enough alone.

Given then a patient with exophoria, either at distance or in accommodation alone, my rule is to correct their refractive error, carefully bearing in mind that convex lenses increase exophoria and concave decrease it. Unless they have a very high degree of hyperopia, which, by the way, you very seldom find in exophoric cases, I never prescribe a convex glass unless the patient is presbyopic, when I order the weakest glass they can use. If the patient is myopic I prescribe a stronger glass than I would for the same patient if he had esophoria. Astigmatism I always endeavor to fully correct, or as much as they will wear with comfort. I practically never prescribe a distant and a reading glass in any patient under forty years of age, as I often find has been done by other oculists. If my patient is presbyopic and has a high degree of exophoria in accommodation, I usually have his near-vision glasses decentered inward or combine a prism base inward to correct part of his exophoria.

The patient with exophoria is then placed upon prism exercise. This *must* be followed out, like all other muscular exercise, systematically, and from my experience the best results are had from exercising three times a week. They are instructed to select three regular days, Monday, Wednesday and Friday, or Tuesday, Thursday and Saturday, on which they must come regularly for treatment. Each treatment lasts from five to fifteen minutes, varying with the case, as some will stand a great deal more strain of the muscles without fatigue or overdoing it. Formerly I allowed patients to purchase a set of prisms and exercise their own

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muscles, but of late this practice has been discontinued, as I find they do very much better at the office than at their own homes. This result I believe to be due to *regular* treatments, to the fact that they are systematically exercised and not over or under exercised, and that it is followed by a few minutes' application of electricity either static, galvanic or faradic, preferably the former. I found that when exercising at home they were doing so at varying distances from the light, that some days they would exercise too much, others not enough, for a longer or shorter period as convenient to them, and more particularly that they would be irregular, frequently omitting the exercise for the time, or perhaps the most harmful feature at home, of exercising when others were in the room to distract their attention. Another reason for office treatment is that they may be tested with the phorometer every two or three days to see that they have not gone from exophoria over to esophoria, which is jumping from the frying pan into the fire. To properly develop the muscles is business not play. The patient's mind and will must be solely on the business in hand. I have over and over again seen them fail to overcome the prism before the eye, because some one entered the room and distracted their attention, or they would ask some question, the mind not being solely on the effort to bring the lights together.

My patients are exercised by looking at a small bright circular light about one-half inch in diameter and eighteen feet from them. I use the square prisms, with the apex touching the nose, and first commence with the lower degrees, increase the strength of the prism two degrees at a time and making the changes as rapidly as possible. Having them overcome each prism two or three times, drawing it away as soon as they have brought the lights together and immediately replacing it again, and every few numbers holding the prism before the eye for about fifteen seconds, having them keep the light one all the time. For example, a patient who has reached 40° at the previous exercise, we commence today with the 10°; after he has brought that together once or twice we jump to 20°, then to 24°, then to 28° and from there 2° at a jump until he reaches about 44°, all the time before the same eye. Then commence at 10° and work up the other eye in the same way. After a minute or two of rest it is repeated before each eye, commencing perhaps at 20°. When he has reached a total of 50° or more we usually commence at 20°, jump to 30°, 34°, 38° and 2° higher each prism from there on. The majority of patients will usually gain from 2° to 8° in their total at each sitting, and are generally carried up as high as 68° to 74° before their

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exophoria is corrected. Some are brought to orthophoria at a very much earlier point. The majority of cases will go right along smoothly, steadily gaining at each treatment. Others, however, will stick at certain points and we can only make them gain by holding the finger about eight inches in front of the eye and having them first fix the finger, then the light. Some others will do better in passing a sticking point by placing a round prism of about two-thirds the degree they cannot overcome, in a spectacle frame before the eye and holding this together; the square prisms are then added to this, changing as before until they have gone above the point they stuck at; as for example, suppose they can overcome a 28°, but cannot the 30°, then a 20° prism is put before the eye in a frame, and then 2°, 4°, 6°, 8°, 10°, 12°, 14° and so on are held successively in front of the 20° prism. In this way they will be made to go above the 30°, and after this is repeated for two or three sittings they will usually go right along again in the regular way.

You will see from this that to get the best results from prism exercise it is not purely mechanical, but brains and experience are necessary. I believe that the rapid exercise, as outlined above, gets better power and action of the muscles than the method adopted by some of having the patient sit with the prisms on steadily looking for some while at the light through the same prism. It would seem to me that we can overstrain and tire the muscle by this method.

This is another reason why I think I have not had an equal success in trying to exercise for hyperphoria and esophoria, as these muscles do not seem to act as quickly, and the only way I have been able to do much with them has been by exercising with prisms set in frames and have them work for a longer time.

In addition to exercising with prisms, I have always, as previously mentioned, followed the treatment with the application of electricity and the use of the indicated remedy. Oftentimes using the remedy locally to the eyelids at the same time it was given in potency internally. The old Dyers method of systematic reading exercises is also a most valuable adjunct in many of these cases.

To more clearly illustrate my method of treating heterophoria we will briefly refer to a few typical cases of the various forms of refractive and muscular errors.

Case One.—*Hyperopia with Esophoria.* Miss J. H., age twenty-seven, came to me on January 20th, 1899, complaining of almost constant headaches for the past eight years. Headaches commenced in the

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morning on rising and grew steadily worse as the day advances, are not particularly aggravated by use of the eyes at near-vision. Says that the headache is about the same all day long, whether she uses her eyes or not. Examination shows O. U. V. = $^{15}/_{15}$ + 1. D. V. = $^{15}/_{15}$. Esophoria, distance 6°, in accommodation 4°. Wearing for constant use + .50 D. O. U., with them esophoria distance 5°, in accommodation 4°. Under atropine O. U. V. = $^{15}/_{40}$ + 2.75 D. V. = $^{15}/_{15}$. One week later + 2 D. O. U., which gave her a vision of $^{15}/_{15}$ and an esophoria of but 1° at distance and orthophoria in accommodation, was ordered for constant use. These glasses at once relieved all of her headaches, and one year later gave her the same tests both as to the vision and the muscles.

Case Two.—*Compound Hyperopic Astigmatism with Esophoria.* Charles M., age sixteen, came on October 14th, 1897, for more or less constant frontal headaches for the past year. Headaches just as much during vacation as in school. Always been a very nervous boy.

O. D. V. = $^{15}/_{80}$ + .75 ⌒ + .50 C. ax. 90° v. = $^{15}/_{15}$
O. S. V. = $^{15}/_{20}$ dif. + .62 ⌒ + .50 C. ax. 90° v. = $^{15}/_{15}$

Esophoria 12°, in accommodation 12°. Under atropine

O. D. V. = $^{15}/_{50}$ + 3.25 D. ⌒ + .50 C. ax. 90° = $^{15}/_{15}$
O. S. V. = $^{15}/_{40}$ dif. + 3. D. ⌒ + .50 C. ax. 90° v. = $^{15}/_{15}$

One week later the following glasses, which gave a vision of $^{15}/_{15}$ and left an esophoria of 8°, were prescribed for constant wear:

O. D. + 2.75 D. ⌒ + .50. C. ax. 90°
O. S. + 2.50 D. ⌒ + .50. C. ax. 90°

January 10th, 1898, reported that headaches had been considerably benefited at first by using the glasses, but for the last three weeks returning again. The refractive and muscular tests being the same his glasses were changed to the following by the addition of a 3° prism base out in each eye.

O. D. + 2.75 D. ⌒ + .50 D. ax. 90° ⌒ 3° prism base out.
O. D. + 2.50 D. ⌒ + .50 D. ax. 90° ⌒ 3° prism base out.

He has worn these constantly for over a year, with no change in the tests (there still being 2° esophoria uncorrected), and has had entire relief of his headache and much less general nervousness.

Case Three.—*Hyperopia with Exophoria.* Mrs. F. F., age thirty-two, on April 16th, 1899, consulted me for constant severe headaches on any use of the eyes at reading or sewing. Eyes would commence to tire and ache after ten or fifteen minutes' use, and on continuing longer would bring on a severe pain in the eyes and head. Had been wearing + .75 D. O. U. for three months, which she says make her worse rather than better. V. = $^{15}/_{15}$ O. U. + .75 D. V. = $^{15}/_{15}$. Thinking there might be a shade of astigmatism she was examined under atropine, but was found to have none, and only .75 D. of hyperopia, there being no latent. Test of the muscles showed a right hyperphoria of 1° and an exophoria of 2° at distance and 8° in accommodation. With the + .75 D. glass she was

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using, the exophoria in accommodation was increased to 12°. As her trouble was only upon using the eyes at near-vision the diagnosis, as to the cause of her headaches, was exophoria. The glasses she had been wearing were discontinued and exercise of the internal recti muscles was followed up until her power of adduction was raised from 14° to 70°, when it was found that no exophoria existed. She was permitted to continue the use of her eyes as much as she wanted to all the time. She began to experience relief from her headaches almost from the time of starting the prism exercise, and by the time she reached an adduction of 40° had no headaches whatever and could use her eyes steadily for two or three hours at a time with absolutely no discomfort. There has been no return of her headaches or asthenopia during the year that has passed.

Case Four.—*Hyperopic Astigmatism with Exophoria.* Master Henry C., age twelve, came to me on February 16th, 1899, for headaches nearly every day in school. Mother stated that he had complained of these headaches almost daily for the last four months, that he had been generally running down and losing in appetite and in weight, and that of late he did not begin to have the life and spirits of other boys of his age. Under atropine

O. U. V. $= {}^{15}/_{20} + .50$ D. ax. 90° V. $= {}^{15}/_{15}$

Exophoria 1°, in accommodation 6°. I told his mother he would probably have to wear glasses to correct the astigmatism, but as I always preferred to keep glasses off from children as long as possible, we would first correct his exophoria by prism exercise. His adduction at first was 18°. When he had acquired an adduction of 64° his exophoria had disappeared, and with it his headache. He has seemed perfectly well ever since, has worn no glasses and has had no return of his headaches.

Case Five.—*Compound Myopic Astigmatism with Exophoria and Right Hyperphoria.* Miss M. E., age twenty-seven, called on September 19th, 1898, complaining of extreme nervousness whenever in a crowd, says she gets panic-stricken, has always been of an extremely nervous temperament and at times hysterical, has recently recovered from a long siege of nervous prostration, always suffers from headaches when driving or riding on the cars. She was wearing

O. D. $-.75$ D. ⌒ $-.75$ D. ax. 180°

O. S. -1.50 D. ⌒ $-.75$ D. ax. 180°

Under atropine

O. D. V. $= {}^{15}/_{40} - 1.$ D. ⌒ $-.75$ D. ax. 180° V. $= {}^{15}/_{15}$

O. S. V. $= {}^{15}/_{70} - 1.75$ D. ⌒ $-.75$ D. ax. 180° V. $= {}^{15}/_{15}$

Right hyperphoria 1½°, esophoria 4°, in accommodation 4°. The following glasses, which were the same she had been wearing, plus the prisms, were ordered for constant use:

O. D. $-.75$ D. ⌒ $-.75$ D. ax. 180° ⌒ 1° prism base down.

O. S. -1.50 D. ⌒ $-.75$ D. ax. 180° ⌒ 2° prism base out.

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The use of these glasses very materially relieved her general nervous symptoms. She had no more trouble in a crowd and her headaches are a thing of the past.

Case Six—*Compound Myopic Astigmatism with Right Hyperphoria and Exophoria.* Miss C. S., age twenty-eight, called January 30th, 1899, complaining of vertigo on walking; would become so dizzy while in the streets that she would often have to sit down from fear of falling. This dizziness has existed for two years and is growing worse. She also is unable to use her eyes for near-vision more than twenty or thirty minutes, as longer use causes very severe frontal headaches. She was then wearing

O. D. — 2. D. ⌒ — .50 D. ax. 15°
O. S. — 1.75 D. ⌒ — .50 D. ax. 165°

Examination under atropine showed

O. D. V. = $^{15}/_{70}$ — 2.50 ⌒ — .50 D. ax. 15° = $^{15}/_{15}$
O. S. V. = $^{15}/_{50}$ — 2.25 D. ⌒ — .50 D. ax. 165° V. = $^{15}/_{15}$

Right hyperphoria 3°, exophoria 4°, in accommodation 10°.

The prescription for glasses was

O. D. — 2.50 D. ⌒ — .50 D. ax. 15° ⌒ 2° prism base down.
O. S. — 2.25 D. ⌒ — .50 D. ax. 165°.

June 4th, 1899, Miss S. returned, saying that the glasses had entirely relieved her vertigo and, that while her headaches were perhaps some better, she was still unable to use her eyes for near work. Examination at this time showed her vision to be the same as before, and with her glasses on there was still 1° of right hyperphoria and an exophoria of 2° at distance and 6° in accommodation. As she seemed to have no trouble except at near work, the remaining 1° of hyperphoria was left alone and prism exercise followed for the exophoria. This within a few weeks wholly relieved her of her headaches and enabled her to use the eyes at near work for hours at a time with perfect comfort.

It is unnecessary to bore you with further repetition of cases. These six cases were simply selected as typical to illustrate my method of treating heterophoria, and not because showing any unusual results. Let us briefly review the essential points I wish to bring out in the discussion of this subject.

Summary.—In case one we find a manifest hyperopia of 1D., but the amount of esophoria indicated a much higher degree of total hyperopia and under atropine we find it to be 2.75 D. Esophoria when present in hyperopic eyes always indicates a high degree of latent hyperopia. The second point in this case is that convex lenses correct esophoria, and it is my rule in this class of cases to prescribe glasses strong enough to correct the esophoria if possible.

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Case two gives precisely similar results, except that the convex lenses in this case could not correct sufficient of the esophoria to relieve my patient, but that the correction of three-fourths of the remaining esophoria by the addition of prisms to his lenses completed the relief.

Case three shows first that when exophoria is associated with hyperopia, the total hyperopia is all or nearly all manifest. Secondly, it shows that convex lenses increase the amount of exophoria in this case from 8° to 12°, with a + .75 D., and that, therefore, convex lenses should not be prescribed in simple cases of hyperopia with exophoria. Further it illustrates that headaches and asthenopic symptoms in this class of cases can be cured by prism exercise to strengthen the power of the internal recti muscles.

Case four gives the same deductions as case three, and in addition shows that it is not always necessary to even correct the lower degrees of astigmatism.

Case five illustrates my method of treating hyperphoria and esophoria when of the lower degrees, i. e., by the combination of prisms with the glass correcting the refractive error.

Case six indicates that we can to a certain extent differentiate by the symptoms which muscular disturbance is causing the trouble. In this case the hyperphoria seems to me to have undoubtedly been the cause of the vertigo, as by its two-thirds correction the patient was entirely relieved. Again the headaches and inability to use the eyes was undoubtedly due to the exophoria, for from its correction these symptoms disappeared.

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THE SURGICAL TREATMENT OF HETEROPHORIA.

BY GEORGE A. SUFFA, M. D.,

Boston, Mass.

IN accepting the invitation to write a paper on the above title, I realized fully that I was approaching a subject upon which there still remains a great diversity of opinion; from the extremists on one side, who cut, snip and readjust all cases (apparently following preconceived ideas, and a line of work to conform to these ideas, until in their own minds they became satisfied that all forms of distant heterophoria become operative), to those who ignore the external eye muscles altogether, all degrees of difference are found, until those, at least, who have had only limited experience in this line, especially after carefully analyzing the writings upon this subject, are left in a maze of doubt just how to proceed.

After deliberate thought I decided to treat the subject in a general way, following the line of treatment used in practice, and the deductions drawn therefrom, hoping in this way to bring out the experience of others and thus to obtain information of value to form a basis for uniformity of thought and action, for which there certainly is much need.

Realizing that for many reasons it is impossible to formulate any rule whereby one may judge just what degree of any given form of heterophoria becomes necessarily operative (even after excluding the extremists) the writer feels convinced that there is a middle ground where all can meet to do the best for those cases having these errors. Just where this point of meeting is, and what latitude may be allowed, can only be found by honest, careful comparison of a large number of cases that have been examined and treated in a way to know that no error has been made in either the refractive or muscular conditions at the time of operating. In order to be sure of these points, no case should be allowed to enter the classification upon which any form of operation has been performed until all latent and manifest errors of refraction have been corrected, and, as far as possible, the muscular errors corrected by prisms, training, or by both, and this correction worn, not for hours (as a New York authority of note does

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in practice), but for weeks, months or years, until a fixed muscular and refractive condition has become established. In addition to this, it is also necessary to have an accurate record of the refractive and muscular states at the different examinations, especially during the growing period, a time when the eyeball lengthens and latent becomes manifest hyperopia, emmetropia or myopia; together with the power of adduction, abduction, sursumduction, rotation, convergence, power of accommodation, and the methods by which the case has been treated; i. e. prisms, training, lenses, etc., in order to compare the changes in refraction and muscular conditions at the different tests or periods of life. It becomes evident that a long time will often be required to establish the true or stationary muscular status at any age where static refraction is subject to a change. And not until such a condition does exist can operative results be accepted as accurate, or given their true value. And, furthermore, no case should be considered suitable for operation until this fixed refractive and muscular state does exist and so great a degree of muscular error remains that relief from asthenopia is not obtained. Then, and only then, are operative measures justifiable.

While the foregoing remarks apply principally to hyperopia with esophoria, a sufficient number of cases of hyperopia with exophoria of moderate degree, both distant and near, have, after wearing lenses correcting the hyperopia alone, or combined with prisms partially or fully correcting the exophoria, either with or without training, become less exophoric or orthophoric, to convince me that these cases should be dealt with fully as conservatively as in esophoria; and only in those cases showing a progressive increase in degree, as hyperopia becomes manifest, and is corrected by lenses, are early operative measures indicated. Thus it will be seen that the cases of esophoria and exophoria requiring early operation become decidedly limited in number, the exception rather than the rule, as some specialists within the specialty would have us believe.

The following two cases are representative of the course these cases pursue, which in esophoria are characteristic and in exophoria are sufficiently numerous to warrant a thorough trial of all means to produce equilibrium, before attempting surgical measures. And I must say that these cases were not selected for this occasion but were taken because they called for treatment while this paper was in preparation, my case books showing many cases with more marked results from this conservative treatment.

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Case One.—Mr. C., twenty-two. First examination May 1st, 1894. He had been wearing R. + 1. D. ⊂ Pr. 3° base out. L. + .50 ⊂ + .50 axis 85° ⊂ Pr. 3° base out, showing esophoria 11° distant, and 6° near with the above lenses, a total of 17° of esophoria distant and 12° near. Having been informed, on the previous day, by the oculist who had prescribed the above formula a year before that nothing further could be done with lenses, and that an operation was necessary to relieve his asthenopia, he sought advice from another source before consenting to an operation. I mention this fact only to show that oculists will differ on this point, the time of operation. Ophthalmoscopic examination showed + 3. D^s. and slight astigmatism, axis 90° O. U. He also accepted at this test

R. $^{20}/_{20}$ + 1.75 D^s. + .50 D^c. ax. 90° = $^{20}/_{15}$
L. $^{20}/_{20}$ + 1.25 D^s. + .75 D^c. ax. 90° = $^{20}/_{15}$

without a mydriatic, not consenting to a test under one, which would have been the proper procedure. With

℞. R. + 1.75 D^s. + .50 D^c. ax. 90°c Pr. 3° base out.
L. + 1.25 D^s. + .75 D^c. ax. 90°c Pr. 3° base out.

esophoria of 8° distant and 3° near was present, a total of 14° distant and 9° near, compared with 17° distant and 12° near with the lenses he had been wearing. With this showing, together with the ophthalmoscopic reading, I could not do otherwise than advise against operation.

On September 14th, 1894, an additional + .50 D^s. O. U. was accepted, and with this addition and prisms reduced to 2° base out, the esophoria was 5° distant and parallel near.

October 8th, 1894, when he reported to have lenses examined, measurement showed esophoria 3° distant and exophoria 2° near.

November 20, 1894. Complained of returning asthenopia, with a feeling as though anterior part of brain was a mass of pulp, accompanied with inability to keep his mind on his work. No stronger spherical lenses were accepted and, as exophoria, both distant and near, was present, with the last prescription, lenses correcting the refraction alone were given, leaving esophoria 3° distant and exophoria 2° near.

March 26th, 1895. Esophoria 1° distant, exophoria 4° near.

July 19th, 1895. Esophoria 1° distant, exophoria 4° near.

No stronger spheric lenses were accepted at these examinations.

October 21st, 1896.

℞. R. + 3. D^s.
L. + 3. D^s. ⊂ .75 D^c. ax. 90°

Esophoria 1° distant, exophoria 4° near with.

May 16th, 1898.

℞. R. + 3. D^s. ⊂ + .37 D^c. ax. 90°
L. + 3. D^s. ⊂ + .75 D^c. ax. 90°. Esophoria = 2° distant, Exophoria = 3° near.

April 17th, 1900. Exophoria 1° distant, 6° near. L. H. ¼° distant and near. Adduction 22°. Abduction 7°. Sursumduction 1½° right; 2½° left. Under prismatic exercise to 25°, until May 9th, showed exophoria 1½°

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distant and ½° near. As no increase in lenses was accepted at these examinations, we may safely conclude that all refractive error has been corrected, and that the tendency in the future will be towards an increase in the exophoria rather than a return to esophoria.

Case Two.—Miss J., age thirty. First examination November 24th, 1894.

V R. = $^{20}/_{30}$ + .25 D. axis 45° $^{20}/_{20}$
L. = $^{20}/_{30}$ + .25 D. axis 180° $^{20}/_{20}$

Exophoria 10° distant, 15° near. Trial prisms were given, beginning with ½° base in, increasing the degree until 5° base in were accepted.

January 5th, 1895.

℞. R. + .25 D^{c}. ax. 45° ⊂ Pr. 5° base in.
L. + .25 D^{c}. ax. 180° ⊂ Pr. 5° base in.

Leaving an exophoria of 2° distant and 7° near.

January 1st, 1896. Exophoria 3° distant and 8° near.

December 18th, 1896. Exophoria 2° distant and 5° near.

April 25th, 1900. Esophoria 4° distant. Exophoria 2° near, with prescription of January 5th, 1895.

April 27th test under scopolamine is

V R. $^{20}/_{70}$ + 1. D^{s}. ⊂ + .25 D^{c}. ax. 15 = $^{20}/_{15}$
L. $^{20}/_{200}$ + 1. D^{s}. ⊂ + .75 D^{c}. ax. 15 = $^{20}/_{20}$

With an exophoria of 6° distant, total.

May 3d, accepts only cylindrical lenses, with

℞. R. + .25 D^{c}. ax. 60 ⊂ Pr. 2° base in.
L. + .75 D^{c}. ax. 15 ⊂ Pr. 2° base in.

Muscles are parallel distant, and there is an exophoria of 4° near.

Such results as these certainly go to show that nature tends to bring about equilibrium in the external eye muscles if we but aid her in establishing harmony in accommodation and convergence; and that equilibrium thus obtained will be more permanent, and more often procured, than if we attempt to lead nature by changing the adjustment of the muscles. Upon this point I can not express my belief too strongly, feeling that if harmony between these two functions remained undisturbed, or, in other words, if no refractive error existed when a child began to exercise these functions, we would have very few lateral muscular errors to contend with at any time of life, and convergent strabismus would be a much rarer condition.

Before taking up the different forms of heterophoria, I shall again mention the method of testing used by me, almost entirely. While I do not presume to say that it is the only method, I do feel that it has the great advantage of being more accurate than any of the appliances used in measuring the muscular irregularities, and its simplicity places

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it within the reach of all. A set of prisms and a small card to exclude one eye is all that is necessary. The general practitioner, if he merely wishes to know if an error exists, can dispense with the prisms. The patient is required to fix a candle flame, or any small object, placed twenty feet away. The examiner covers and uncovers each eye alternately, requesting the patient to observe if there is any movement of the flame or object looked at, as each eye is uncovered, and the direction of such movement. At the same time the examiner notes the movement as each eye is uncovered and the direction of such movement. The prism which does away with all movement expresses the degree of error. This test is made both with and without the lenses correcting the refractive error, the difference often giving valuable information as to what the future course of the case will be. Case number 1 is a good illustration of this point.

After having decided to operate, when all other methods have failed to correct the heterophoria, I am satisfied after numerous experiences, that a graduated tenotomy, as advised by Dr. Stevens, which frees only the central part of the attachment of a muscle, will result in failure. This conclusion was reached a number of years ago by daily observation and measurements of cases tenotomized in this way, and in seeing a gradual return to the original deviation, as healing took place: some cases showing even a greater degree of error when the tissues had fully recovered from the injury. These cases were of low degree, from 2° to 6°, and immediately after the operation showed correction, or slight over correction. The gradual return in these cases, to the original state, proved conclusively to me that the contraction of the new tissue, as healing progressed, always equalled, and often exceeded, the correction, or effects of the operation, and therefore was a useless operation, requiring repeated trials at intervals, until, finally, the whole tendon was separated and displaced, so as to obtain permanent correction, or perhaps, over correction. These repeated failures led me to make experimental operations on rabbits until I became satisfied that the following operation would give permanent results, before applying it to cases. The operation has been performed by me many times since its introduction in a paper entitled "Muscular Insufficiencies," read at the American Institute meeting, at Newport, five years ago, and I have no desire to improve or discard the operation. It is simply a modification of Dr. Stevens's graduated tenotomy, being a limited complete tenotomy, and differs only in separating the conjunctiva over the tendon and beyond the

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lateral borders of the muscle; the extent of the separation depending on the amount of displacement desired. A small opening is made through capsule and tendon, at the centre, and a small hook introduced successively under each half of the muscle and the attachment completely severed from the sclera, actually displacing the attachment.

In operating for esophoria it is my endeavor to slightly under correct the deviation, because the effect is liable to increase and because a slight esophoria is preferable to an exophoria; the younger the patient the greater is my desire not to produce distant exophoria. Not over 10° of deviation should be removed from one eye. If more exists it is best to operate on both eyes, removing fully one-half of the error at the first operation, and waiting at least a month before operating on the other eye, for occasionally we meet with a surprise in a continuous lessening of the remaining esophoria, or even a muscle balance in a short time. This gradual lessening of the esophoria, in some cases, is due to an increasing effect of the tenotomy, and in others, it is simply nature's return to equilibrium after having been aided by the partial correction.

The operation for exophoria is the same, except that a full correction is desired, as it is the rule for the effects of the operation to grow less during healing and for a long time afterward, often to a full return of the original exophoria. This forces the conviction upon me that in exophoria we are usually dealing with a *true* insufficiency of the interni, and that the proper procedure would be to advance an internus rather than to set back an externus. My experience in this line has been too limited to advance a positive opinion as to whether the final results are more permanent than from tenotomizing the externi. The few cases upon which I have performed advancement have been permanent and go to show that advancement is the proper method. Upon this point it will be especially gratifying to me to hear the opinion of those who have had a large experience in this line, as I feel it important to have definite knowledge upon this point.

In hyperphoria, if lenses are required for distant vision, more than 6° should be present before an operation should be undertaken. If no lenses are necessary, any troublesome degree may be corrected by tenotomy if prisms are refused. But operation should be advised against unless the symptoms are sufficiently grave, or unless, at least, 6° of hyperphoria is present. For this amount it is necessary to divide the

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whole tendinous attachment. If more than 6° exists it is best to divide the operation between the superior rectus and the opposite inferior rectus, but not at one sitting. My experience with Dr. Stevens's graduated tenotomy upon the interni and externi muscles has left no desire to try the method on a superior or inferior muscle.

The mere fact that heterophoria exists, even if it is of high degree, is no reason in itself for operative measures. So many factors often entering into its formation, make it necessary to consider well, all these factors in their relations to each other. A low degree of hyperopia tends to produce a high degree of esophoria far more often than does a high degree of hyperopia. This we know to be a fact even where this strengthening or developing effect of the interni is carried to the extent of an actual deviation. We all know well that the greater number of these cases show only a moderate degree of hyperopia, proving positively that the stimulating effect of constant distant accommodation upon the interni is cumulative. And it certainly is more rational and scientific, and, best of all, more permanent, to bring about a gradual return of equilibrium—which I will call normal equilibrium—than to produce immediate balance of the eye muscles by operation. It certainly seems reasonable, and easy of comprehension, that if we give the nerve centres governing the eye muscles and accommodation time to adjust themselves to the new order of things (i. e., cause a state of equilibrium between efferent and afferent nerve currents to be brought about generally—thereby allowing these governing centres to assume their normal functions), that the results will be permanent. It is often surprising to see how readily a high degree of hyperphoria is overcome, and even more surprising that no distressing symptoms are present, whereas in low degrees, asthenopia is the rule. This freedom from asthenopia I have often observed in high degrees of exophoria, especially when one eye deviates outward when the possessor is in a state of inattention, and at the instant of mental activity the eye comes in line of vision and remains in line during activity, without any apparent effort. Many of these cases show a lower degree of error at the near point, which may be accounted for, in some cases, by disturbance in either superior, inferior or oblique muscles. But as only a small proportion show involvement of these muscles, I can see no cause other than a central one to explain this phenonema.

These cases might be considered in the operative class, and suitable for tenotomy of the externi—as usually convergence and adduction are

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relatively strong—had not my experience been very unsatisfactory. Almost without exception have these cases returned to the original position even after a complete tenotomy—in several cases after dividing both externi at different times, and twice purposely over-correcting to produce diplopia, requiring a 10 prism base out to obtain a single image. That an advancement of the internal rectus of the deviating eye would be the means to bring about a permanent correction seems reasonable to me, but I have been unable to persuade any of my cases to consent to this measure after the failures following tenotomy of the externi. Neither can I mention the views of the graduated tenotomy enthusiasts, as they maintain as absolute silence on this form of exophoria as if it did not exist. I sincerely hope that if any members of this society have had experience in this line, that they will give a full statement as to how the advancement was performed; if it was necessary to tenotomize the external rectus at the same time, or at all; and the result after six months or more had expired. For the failure after complete tenotomy of an external muscle in these cases, as well as in a large proportion of all forms of exophoria, is one of the discouraging features in muscle work.

When the oblique muscles are involved, with any form of heterophoria, we are confronted with a very difficult problem. Their normal action being so complex, associated with equal recti muscles, that it is impossible to estimate their influence, in either the production of recti unbalance, or their effect on the final result, after tenotomy of any of these muscles. So that I approach these cases even more guardedly than uncomplicated forms of heterophoria.

In conclusion, I desire to emphasize that in no case of esophoria or exophoria is any form of operation allowable until all errors of refraction have been corrected and all muscular errors corrected, as far as possible, by training, by prisms combined with the lenses correcting the refractive error, or by all of these means combined (according to the demands of the case; and sufficient time has been allowed to pass until the muscles have reached a state where no further change takes place. Thus by gradually establishing a condition as near equilibrium as possible between the muscles governing the movements of the eye-ball and the ciliary muscle, we have given time for the centres controlling these functions to conform to the new or present requirements. Thus having established a normal relation in all the parts concerned, we may hope for permanent muscular equilibrium.

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Permanency, I feel, is often defeated by suddenly induced muscle balance by operation, because those centres from habit will continue, for a time at least, to send out faulty impulse, not having had time to adjust themselves to the new order of things; and because the centres finally do change when an altered demand of nerve force is made upon them; meanwhile the muscles have again assumed irregularity.

Finally, I feel that if the centres controlling these movements are not given time to become normal in proportion as the muscular balance is established, that we cannot hope for permanent results.

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HETEROPHORIA.

BY F. PARK LEWIS, M. D.,

Buffalo, N. Y.

FROM the confusion which a multitude of widely differing views has occasioned concerning the bearing which ocular muscular unbalance exerts upon general nutritive functions, there stands out in pretty clear detail several pronounced facts, which are of themselves beyond question, even if some of the conditions upon which they are dependent are still undetermined.

The first of these facts might be formulated as follows:

Cases occur under the observation of ophthalmologists, whether these be many or few, in which profound nutritive disturbances are manifested—as a direct result of an endeavor to co-ordinate the unbalanced straight muscles of the eyes.

The following case is in point, and directly demonstrates the truth of this proposition:

Case One.—Miss F——, a tall, attractive, brown-haired girl, was referred to me by her physician for the relief of severe and obstinate headaches, which had recently increased in frequency and in severity so as to be almost unbearable. As she looked at me she evidently endeavored to fix her gaze, but the eyes had an uncertain fitful manner of rolling away, out or down, so that she was unable to maintain a fixity of expression.

She was wearing glasses, a hyperopic cylinder in one eye, and a crossed cylinder in the other, and the left upper lid drooped until nearly half of the eye-ball was covered.

A marked feature of her appearance was a band of white about one inch wide, which extended through her hair, beginning at the middle of the forehead and extending back in the hair to the depth of half an inch. In the outer half of the eyebrow, on the left side, the hair was scant and colorless. This condition had been developing for four or five years.

A careful refractive test under mydriatic demonstrated the following equation:

R. + 1 D. cyl. ax. 90° V. = $^{20}/_{20}$
L. + 1 D. cyl. ax. 150° V. = $^{20}/_{20}$

A test of the muscles was made with difficulty as diplopia was not easily obtained; but finally it was discovered that there was an enormous ver-

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tical disparity and 50° of prism was required, divided between the right and left eyes, base down in the right and up in the left, to give single fixation.

The phorometer showed free movement of the eye-balls when moved separately, but when used together the movement upward in the left was limited. A free and complete tenotomy was made of the left inferior rectus, leaving apparently slight left hyperphoria; in making the tenotomy the band attaching the inferior rectus to the eye-ball was as broad and strong as that usually found in the rectus internus. The relief of the headache and of the general discomfort was immediate.

One month later my tests showed correct muscular balance, and to my surprise I found that the color was returning in the white stripe of hair. At the end of two months the distinguishing mark had almost wholly vanished, and at the present time the hair has so nearly resumed its original color that one must look with great care to find an occasional gray hair; the colorless hairs in the brow are gradually being replaced with thick, well-nourished black ones, and the young woman's physical condition is such as she has not known for fourteen years.

This very exceptional case naturally gives rise to some important questions.

The white band began exactly at the median line, and extended an inch toward the left—the side of the cataphoric eye.

Is there a definite relationship between the inervation of the patheticus and the branch of the third supplying the levator palpebrarum, and the trophic fibers controlling the nutrition of this special region of the scalp? Or was the general nervous strain shown as a reflex in the hair follicles—the localized stripe being accidental?

Be that as it may, the direct relationship of muscular eye strain to a trophic neurosis is undoubted, and as no change in the habits of the patient was undertaken the result could be due only to the surgical interference.

The second fact that has been demonstrated is that a form of intestinal indigestion occurring frequently at or about middle life, manifested by fermentation of food and abdominal pains, is so often associated with abnormal refractive conditions and inco-ordination of the eye muscles that it has been impossible not to ascribe the digestive disturbances, in large measure at least, to imperfect intestinal inervation dependent upon an excessive demand on the nerve energies in the function of vision. This is the more pronounced at about the period at which the accommodation is most severely taxed—when presbyopia is first manifested—but before relief has been secured by correct glasses.

The correction of the refractive error is then not sufficient and a mus-

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cular unbalance, which may have been latent, can become a source of profound disturbances. An illustration briefly given will more clearly explain this proposition:

Case Two.—Mr. L——, aet. forty, having large business responsibilities, has for several years been disturbed by irregularities of the bowels, pains which to his over-anxious mind suggested appendicitis and a multitude of nervous symptoms, to which he attached almost a hypochondriacal importance. The correction of a slight astigmatism rendered his eyes comfortable, but a year's treatment failed to correct his digestive disturbances, until a right hyperphoria of 9° which had been latent was discovered and the tendon divided. The rapid relief of the intestinal disturbance makes a causative relation between the eye-strain and the nervous intestinal dyspepsia seem almost conclusive.

The third point to be formulated, is, *that when an abnormal expenditure of nervous energy is continued for a protracted period, organic lesions may follow, that will resist all treatment until the primary cause is overcome.*

The following case, a case of rheumatic arthritis deformans, illustrates this point:

Case Three.—A young woman, twenty-four years of age, has been a sufferer from this painful and disfiguring malady for years. She walked with difficulty so enlarged were her joints; her hands were twisted out of shape, and medicinal, dietetic or hygienic treatment had been unable to lessen the severity of the attacks. Her refractive error was small, but to my astonishment a disparity of 20° was found in her vertical eye muscles. It was not thought best to operate—although the desirability of surgical correction was obvious—but she was given correcting prisms co-incidently with the use of the correcting glasses, the painful attacks ceased, and have never returned, now over a year; at the same time the general health has improved to a degree not before experienced in years. The rationale of the connection in this case is that the abnormal amount of nervous energy used in fixing the eyes lowered the functional activity of the digestive system, permitting the organism to be loaded with toxins, which manifested their presence in urates and oxylates deposited around the joints.

A like form of disturbance, but otherwise manifested, is not of unfrequent occurrence.

Vertigo and nausea, amounting to persistent vomiting, is commonly dependent upon eye strain—indeed sick headache is almost always refractive or muscular.

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Case Four.—Mrs. B——, wife of a retired physician, a sensitively organized woman of forty-six years, has for the past five years suffered from headaches of a most persistent character, with great discomfort in using her eyes. Several exceedingly careful refractionists had adjusted glasses for her, her accommodation being at the time completely paralyzed artificially. But none of the more permanent symptoms were relieved. No organic gastric disease was present—the impaired functional activity of the stomach apparently being wholly nervous.

Together with a small amount of hyperopic astigmatism she had weak external recti.

I employed in this case a measure that I have frequently found of very great value, and that will in a large proportion of cases do all that a tenotomy of the interni will accomplish. Indeed it is a grave question in my mind whether much of the muscular unbalance that we meet is not dependent upon imperfect inervation rather than upon wrongly placed tendinous attachments, requiring, therefore, gymnastic rather than surgical treatment.

In this instance I adjusted for use in my office prisms each of 1° base in, and allowed my patient to wear them during the morning. At the end of two hours the strained feeling which had persisted for months was greatly relieved, and I made, therefore, for constant use the following perscription:

℞. R. + .50 D. cyl. ax. 15° ⊂ Pr. 1° base in.
L. + .25 D. cyl. ax. 145° ⊂ Pr. 1° base in.

These, with a spherical addition to correct a normal presbyopia, have given complete relief, the vertigo was quickly overcome, the stomach resumed its proper functional activity, and the nervous tension in the head which had persisted for five years was wholly relieved.

The nervous strain produced by refractive and muscular abnormalities, if continued sufficiently long, may, in neurotic patients, result in mental derangement.

Case Five.—Mr. C——, a rather high strung fellow of thirty-six, had been disturbed for some years by business difficulties. This culminated one morning in an attempt at suicide, when a medical examination showed him to be suffering an aggravated form of melancholia. He was sent to the State Hospital, where he remained for nearly a year, at the end of which time he had sufficiently recovered to return to active life. The normal mental condition continued for only about three months, however, when he was again returned to the hospital, and I think after another interval was for a third time put under restraint.

During the last interval the attention of his friends was called to his eyes. His accommodation being fully relaxed by atropine, I found the following equation:

R. + 1. D. sph. + 1. D. cyl. ax. 90 V. $^{20}/_{20}$
L. + 3. D. cyl. ax. 90 V. $^{20}/_{20}$

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Full correcting glasses were given with so great relief to the nervous symptoms that no abnormal mental depression has since appeared. He was also suffering from some toxic symptoms and dietetic suggestions were made, but no other treatment was instituted; he is now, after an interval of six years, actively engaged in business, and is seemingly well.

I have chosen these as illustrative cases in demonstration of the fact that there exists a most intimate relationship between eye strain and the organic functions of the body, but I would not have it understood that, conversely, remote disturbances may not affect the muscular balance.

It is common to find paretic involvement of the spine manifesting itself in weakness of one or several of the eye muscles. Uterine and ovarian irritation may appear reflexly in asthenopia that no local treatment of the eyes will relieve; very slight muscular disturbances, specific or otherwise, will give evidence of what appears to be heterophoria, and even anæmia has associated with it muscular unbalance. I remember very well seeing a marked hyperphoria operated by an able colleague, which ultimately was shown to depend upon an orbital neoplasm. The conclusions that are warranted, therefore, would seem to be first:

That profound general disturbances may be dependent upon heterophoria, and in suitable cases, correcting tenotomy will give relief.

Second, that in a large proportion of cases of heterophoria operative measures are not required, but that relief may be secured by the orthoptic action of prisms.

Third, that in still another class of cases heterophoria is but a local manifestation of a departure from health in other organs, and in such cases local surgical measures can never be other than injurious.

Fourth, that while muscular abnormalities are very frequently the source of nervous disturbances rather than their result, in every instance their adequate correction requires the most exacting care, unending patience, and discriminating judgment.

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MY EXPERIENCE WITH GRADUATED TENOTOMY.

BY FRANCES B. KELLOGG, M. D.,

Los Angeles, Cal.

THE query has been propounded: Shall we cut the ocular muscles? In the light of the experience of the past few years, I have no hesitation in answering, "Yes." I am confident that anyone who will enter this field conservatively but fearlessly, will arrive at the same conclusion.

In Dr. Ranney's "Eye Strain in Health and Disease," one observation will strike the reader as unanswerable in establishing the reality and frequency of inherent muscular deviations, viz.: A considerable proportion of blind eyes deviate from the normal axis of vision. This is daily verified in the office. The proportion of cases of strabismus in which the deviating eyes are amblyopic, is only an amplification of the same observation. I do not think that there is a reasonable doubt but that, with normal vision, many of these eyes would have been held straight, and held straight at the expense of a nerve strain involving not only the eye, but other organs of the body. There are many such eyes being held straight, and every nerve in the body is being drawn upon to accomplish it. Assume such a case of esophoria, for instance, and then consider the wisdom of trying to develop the weak externi by prismatic exercise. It would be like developing the biceps by first weighting it with more than it could carry and then loading on still more for "exercise."

Prismatic exercise has its place, but it is one of comparatively limited usefulness. Graduated tenotomy has, for me, extended its field. I have found, e. g., in cases of esophoria, where the normal balance has been nearly but not quite restored, exercise of the externi will remove the remaining symptoms and secure perfect comfort. It is reasonable to expect more effect from exercise, if the weight of the antagonist is lightened. Exercise of the externi, without this preliminary, has ever been a failure in my hands. Exercise of the interni will give relief to neurotic insufficiency, but where there is a persistent manifest exophoria, it will not accomplish much.

Before taking up graduated tenotomy, I had come to recognize that there was a class of cases in which the most careful correction of the re-

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fraction failed to more than partially relieve. As a rule, the refractive error was low and out of all proportion to the degree of asthenopia. This class has been very much reduced since I have adopted the practice of developing latent heterophoria and operating upon it.

One of my first cases was of this type. Miss B., aged eighteen, had suffered almost constantly with her eyes, and been unable to use them for two years. During all of that time she had been under the care of two old-school specialists, who had fitted her to glasses, and fitted her again. They had also treated her with electricity and otherwise. Neither the glasses nor the treatment afforded any relief, but, on the contrary, she became more and more affected, until she was upon the verge of nervous prostration. She was depressed and moved to tears at the least provocation. At her first examination she showed 2 degrees of manifest esophoria. She also stated that she remembered to have seen double at times. I continued her correction, which I verified, and hung over it a pair of drags containing prisms of 1 degree each, base out. In two days she presented herself, and reported distinct relief from wearing the prisms. When I get this report, I always feel sure that I am on the right track. She also showed 3 degrees additional of esophoria. I corrected 4 of the 5 degrees, and this gave still greater relief and brought still more of the latent condition to the surface. I kept following it up as it showed itself, until she was wearing prisms of 5 degrees each, and showing an excess of esophoria above these of 4 degrees, making a total of 14 degrees. With these prisms she was able to use her eyes as much as she wished without trouble. I did not carry the development farther, but did a graduated tenotomy of the right internal rectus, reducing the esophoria, as nearly as I could judge, about one-half. I then reduced the strength of the prisms to 4 degrees and allowed the eye to clear up. After operating upon the other eye, I returned to the prisms and developed the remaining esophoria sufficiently to repeat the procedure.

After four tenotomies, the work was interrupted for a year, by an attack of typhoid fever. It is interesting to note, however, that during all this prismatic and operative experience, she had been able to use her eyes without much restraint, something she had been entirely unable to do for two years previously. After recovering from typhoid fever, her mother became a bed-ridden invalid, and Miss B. took charge of the house and acted as nurse besides. During this interval, she used her eyes without restraint, with the occasional aid of weak

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prisms. At the end of a very trying year, she had entirely regained her health and spirits, and returned for the completion of the work, which was accomplished in two operations. The subconjunctival hemorrhages incident to two or three of these operations were severe, entirely surrounding the cornea. I have been unable to practically eliminate this unpleasant feature by the preliminary use of the suprarenal extract.

After my final operation on Miss B., I still found the abduction somewhat below normal, viz.: 6 degrees. It then occurred to me that the conditions were favorable for prismatic exercise of the externi. I gave her 7 degrees of prisms, base in, with instructions to wear for ten minutes several times a day. After a few days, she had no difficulty in maintaining single vision with them. On one occasion since then, the eyes began to give trouble, and examination showed that the abduction had dropped to 5 degrees. A few days' exercise of the externi served to raise their power again to 7 degrees, with entire relief to the eyes. Since then, they have given no trouble. She uses them all she wishes to, and declares that she never felt so well in her life, which she attributes entirely to her eye treatment.

It is interesting, in connection with this case, to consider that of her mother. After she had been in bed for a year, a change of physicians brought Dr. Van N. into the case, who at once called me in to examine the eyes on account of frequent headaches, which she had been subject to all her life. I found her wearing glasses to read with, + 50 sp. ⊃ + .25 c. ax. 90, which had been prescribed by another oculist, after a cycloplegic. She could see nothing with them at a distance, which showed that she was practically emetropic. She developed 18 degrees of esophoria within a week. Two graduated tenotomies were performed preliminary to rectal and uterine surgery which Dr. Van N. found necessary. The eye work will be resumed at an early date, and it is a significant fact that it was undertaken eagerly by this life-long semi-invalid, because her daughter had been benefited so remarkably. Doubtless the rectal and uterine ailments have played an important part in dragging her down, but they were incidental to maternity, while the pre-marital history of the patient was a clear one of neurasthenia. This was the sand foundation of the maternal superstructure, with its inevitable collapse, and, in my opinion, this was due to life-long eye-strain.

I would like to emphasize the importance of this particular form of eye-strain in the etiology of general nervous conditions. Among

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the cases upon which I have operated, I have noted especially stomach symptoms. The patient would report seizures of nausea and vomiting after protracted use of the eyes, nausea associated with dizziness, car sickness, flatulent dyspepsia, inability to eat acid fruits, etc., etc. It has been most gratifying to note the prompt and permanent relief of these symptoms upon the removal of the eye-strain.

Other cases present the familiar ear-marks of nerve exhaustion and prostration. One case reported suicidal impulse upon use of the eyes, while the general condition was one of great hyperæsthesia and nervous tension. Use of the eyes for more than a few minutes was impossible. As a result of operative and prismatic relief, she is now taking a normal school course in sloyd, drawing, psychology and pedagogy, and has has gained flesh while doing it. She has to use her eyes constantly, and is able to do so without inconvenience.

In the last two years I have operated on some fifteen cases, and can say that in all, the results have been satisfactory, and in several of them, brilliant. A few of them are incomplete and judgment upon them would be premature, but sufficient time has elapsed to justify an opinion upon the earlier cases, and without exception they have stood the test.

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EYE STRAIN AS A CAUSE OF DISEASE.

BY FRANK D. W. BATES, M. D.,

Hamilton, Ontario.

IN taking up the above subject again I have no brilliant cures to relate; but in my practice during the past year I have seen sufficient to strengthen my belief in the theory advocated in my last paper.

You will readily understand that practicing in a city of 50,000 inhabitants, where there are between 50 and 60 allopathic physicians and only 3 homœopaths, it is uphill work for a homœopathic specialist; and it is difficult to get hold of cases to operate upon, where such a large majority of the physicians in general practice are doing their best to cast ridicule upon the theory.

Unfortunately two cases upon whom I operated for diabetes died—one thirteen months after he came under my care and the other fifteen months. They had both been told by their attending physicians before I saw them that they could not live more than three or four months. One of them, a little girl ten years of age, was able to attend school for eight months after I operated upon her, though she had not been able to attend for several months before, and her parents had never expected she would be able to attend again. However, I got no credit for it, as the family physician assured them that there was nothing in the theory, and that the operations upon her eyes had nothing whatever to do with her improvement. In the other case, I did get credit from the parties interested; for the patient belonged to a wealthy family and no expense had been spared to get the best medical advice; and since I was the only one under whose treatment he had improved, both he and his wife felt that had his eyes been operated upon sooner he might have been cured. About two months before he died, and after he had become so weak that he had to be wheeled around in a chair, his wife wrote me suggesting that I go over to England and see if I could not do something more for him.

As regards diabetes, the majority of cases that have come under the care of physicians in the past have been well advanced before the disease has been discovered. During my practice I have had several per-

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sons consult me as to their eyes, who never suspected that they had diabetes until I discovered the characteristic trouble in the retina, and upon examining the urine found it loaded with sugar. But now that the leading insurance companies are making an examination of the urine compulsory in all applications for a policy, I believe we are going to discover a great many cases of diabetes in the incipient stages that would not otherwise have been discovered until well advanced. I, myself, being an examiner for one of the largest insurance companies in Ontario, have during the past year discovered six cases of high specific gravity of the urine—where it has ranged continuously from 1030 to 1035. In each case I examined the urine some eight or ten times, over a period of about two weeks, with the same result. I don't say positively that these were all cases of diabetes; but certainly with our present knowledge of the causes of high specific gravity of the urine we must have a strong suspicion of the same in such cases.

In all of these six cases I examined the eyes. Did not find any marked muscular trouble in any of them; but found errors of the refraction in all—both simple and compound hyperopic astigmia. I paralyzed the accommodation in each case, with the result of lowering the specific gravity to about or below normal in all while under the effect of the mydriatic. To give one case in detail:

Case One.—J. C., aged thirty, a commercial traveller, came to me in November, 1899, to be examined for insurance. I found him physically in good condition, with good family history. But when I came to examine the urine found the specific gravity 1035. He did not pass an inordinate amount, nor did he drink more than an ordinary amount of liquid. I told him he would not pass with the specific gravity of urine so high; hence it would be necessary to make several examinations. He came in every day or two for a period of two weeks, so that I made 8 or 10 examinations of the urine; but did not find it below 1030 at any time. I then explained to him the theory that diabetes was caused by strain upon the eyes, and since he was possibly in the incipient stages of the same advised him to have his eyes thoroughly examined and any error of refraction or muscular trouble he might have corrected, to which he assented. But since he could not lay off from work, and had to examine samples and figures every day, he would only allow me to paralyze the accommodation of one eye at a time; which I did by means of scopolamine $^1/_{10}$ of 1 per cent. I paralyzed the accommodation of the first eye on Friday, November 24, and found the refraction of same O. D.—.50 D. cyl. axis 15°.

The next day he came in and I found the specific gravity of the urine. 1026. On the afternoon of that day, Saturday, the effect on first eye

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having nearly worn off, I paralyzed the accommodation of second eye, and found refraction of same O. S. — .25 D. cyl. axis 165°. On the next day he came in, and I found the specific gravity of urine 1024. I then ordered his glasses; but as he was obliged to go out of the city the next morning and could not tell just where he would be, I had to keep the glasses for him until his return. He returned one week from the following Saturday night, and came direct to my office. I examined the urine and found specific gravity 1032. I gave him his glasses; but as he was going out of the city again the next afternoon I could only see him after his having worn the same that evening and a few hours the next day, when I found the specific gravity 1026. I have examined him several times since then; but have never found the specific gravity over 1022, and the last time, about two weeks ago, it was just 1020.

In four of the other five cases the specific gravity has been reduced, ranging most of the time above normal, but not as high as before the accommodation was paralyzed or before wearing the glasses. I have them all under observation and may later on discover some muscular trouble to be corrected. The sixth case took no stock in the theory, and would not consent to the wearing of glasses. He was a young man of seventeen, and I believe his father consulted their family physician in the matter, who told him there was nothing in the theory. I may hear from him later on; for the specific gravity ran very high in his case, and I found traces of sugar several times; and we know what the result of the ordinary treatment of diabetes mellitus is—especially in young persons.

Case Two.—I had one case of diabetes sent to me about six weeks ago from a city in one of the Western States, which had been under the case of a physician for three years without result. He was a man forty year of age. Specific gravity of urine ranged from 1030 to 1035, and sometimes higher, with traces of sugar occasionally. I found compound hyperopic astigma + .50 D. ⌒ + .50 D. cyl. axis 180° O. U., with slight esophoria. Tropometer showed short internal rectus of left eye and external rectus of right eye. I paralyzed the accommodation with atropine, and kept it so for some two weeks, during all of which period the specific gravity remained at or below normal—sometimes going down as low as 1003, with no albumen. But shortly after I stopped putting the drops into the eyes the specific gravity gradually went up again, though not as high as before—ranging from below normal to 1026 or 1028. He was anxious to get back to his business as soon as possible, and I was obliged to hurry through with the case more quickly than I would like to have done; so, without waiting to watch the results of correction of the refraction, I performed a partial tenotomy of the internal rectus of left eye, and a week or so later the same of external rectus of right eye;

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three or four days after which he went home—after having remained with me for just four weeks. Before going home all tests showed muscles very nearly balanced—though still showed slight esophoria; for which I gave him some weak prisms to wear in front of his glasses—with base out. On hearing from him after his return home I learned that after the fatigue of his journey and some hard work after reaching there the specific gravity had gone up again to slightly above 1030. He had not commenced wearing the prisms as yet, as I had advised him not to do so for a few days, and not then unless the specific gravity remained high.

I believe a great many disorders which are supposed to originate in the stomach and liver are really the result of eye strain.

Case Three.—A man, aged forty-four, book-keeper, consulted me some two years ago in reference to his eyes, which had troubled him off and on for some time; but he had attributed it to trouble with his stomach and liver—as he had been subject to frequent so-called "bilious attacks" for years, and his eyes always troubled him more when these attacks came on. I found hyperopic astigmia and prescribed glasses for the same; after which his eyes ceased to trouble him and the bilious attacks disappeared. A few days since he consulted me again, saying that for the past month his eyes had been troubling him again, and he did not know but his glasses needed changing. Said he would have come in sooner, but that about the time his eyes commenced to trouble him one of his old bilious attacks had come on, and he thought the eye trouble was due to that and would pass off; but that neither his eyes nor his stomach had been altogether right since. It is hard to get people to believe that the eye trouble is the cause instead of the result of various troubles of the system; and this man, although he had been free from his bilious attacks for two years, could not altogether see how a little trouble with his eyes could be the cause of so much general disturbance. I examined his glasses, and found that the frame had become bent so that the axis of the cylinder in one eye (the other being all right) was about 10° out. I bent the frame back to its proper position, and he experienced immediate relief to his eyes; and will have no more bilious attacks.

Case Four.—A young married lady consulted me some three years ago because her physician had advised her to consult an oculist. She said to me: "Doctor, I don't think there is anything wrong with my eyes, and I think you will agree with me when you have examined them; but Doctor S——, who has been treating me for the past few months, said he had given me everything he could think of for my trouble, without giving me more than temporary relief, and he could not imagine what could be the cause of my trouble unless it might come from my eyes." I asked her if her eyes ached at all when she read much, and she said no; she could read as long as she liked without their

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troubling her in the least; and as to headaches, said she had a slight one occasionally, but nothing to speak of. She had been under the care of several different physicians for two years previous, and each one had directed his treatment to her stomach and liver—they all agreeing that her trouble originated from those organs. She had frequent attacks of vertigo, which would come on her sometimes suddenly when she was in the street, and unless there was something close at hand which she could take hold of to steady herself she would fall over. She had to be very careful what she ate, as her stomach was very easily upset. Upon examining her eyes found myopic astigmia—1.50 D. cyl. axis 10° in one eye and—1.25 D. cyl. axis 170° in the other, with no apparent muscular trouble. I said to her that I could not say positively that all her trouble arose from her eyes, but that it might all come from that source, and I advised her by all means to wear glasses. She consented to it reluctantly, as she did not like the idea of having to wear them. I prescribed for her, and three months thereafter received a letter from her husband thanking me for what I had done for her—saying that she had not had the slightest trouble with her head or stomach since, and could eat anything she liked.

Case Five.—Another case was that of a nurse forty years of age, who had been subject to so-called "bilious attacks" for years; but latterly they had become so frequent that she had been obliged to give up nursing,—scarcely a week passing without her having one of her attacks. She consulted me as she began to have some trouble in reading or sewing. I found compound hyperopic astigmia + 1. D. ⌒ + .75 D. cyl. O. U., for which I prescribed glasses; and the bilious attacks disappeared and she was enabled to resume her occupation. I have many similar cases in my record books.

During the past year I have made several attempts to get into some of the Insane Asylums and try some experiments; but I find it a difficult thing to do. I wrote to the Superintendent of the Middletown Asylum some months ago, explaining to him the theory as to eye strain being a cause of insanity, and offering to go there and operate upon half a dozen or so hopeless cases—poor cases, where there were no friends to object; but his reply was that he had submitted my letter to their medical attendant, and he had said that eye strain had nothing whatever to do with insanity. With all due respect to that medical attendant, I think we have sufficient evidence from cases reported by Drs. Stevens and Ranney, of New York, and others, to convince us that he is in error.

Now, a query has arisen in my mind which I would like to submit to you: Why is it that some persons are more susceptible to disease than others? Two persons go into a malarious district; one is taken

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with fever and ague, the other is not. Or, two persons are exposed to some acute infectious disease; one takes it and the other does not. We know that some persons go through life seeming to be exempt from contagion of any sort, while others seem to take everything that comes along. We say that the systems of those who seem to be exempt are in a good healthy condition; that the germs of disease cannot flourish in such soil. Such does not seem to me a very satisfactory explanation. Why are they in such healthy condition? Does it not seem plausible to suppose that they have a large capital stock of nerve force which enables them to resist disease, while those who either did not have the same amount of nerve force to start with, or have used it up in one way or another, having little more on hand than is manufactured from day to day, have not the same power of resistance? If such is the case, in what way do we use up more nerve force than through the eyes, where the refraction or muscular equilibrium is at fault? I, myself, believe there is no way in which the system is undermined to such an extent as through eye strain; for the nerve force is being used up constantly, and we are unconscious of it.

Now, some may look upon me as being an enthusiast on this subject; but I do not consider that I am such. Some men pride themselves upon being conservative; but I think there is such a thing as being too conservative in medicine. When a theory comes up, which is as important as this one certainly is, I believe we should not leave a stone unturned to go to the bottom of it and find out whether there is anything in it or not.

DISCUSSION UPON HETEROPHORIA.

Dr. S. C. Delap: In this instance a preliminary statement may not be out of order. This paper was received from Dr. Wm. R. King, having been addressed to him by the secretary of the Society at the instance of its officers as "the most suitable man to discuss the paper." The letter was dated May 25th. It reached me while indisposed, June 12th, under "instructions."

A careful perusal of the paper indicates that Dr. Wilson was certainly "the most suitable man" to write the paper, and no doubt exists in the mind of this writer that, while Dr. King is certainly "the most suitable man" to discuss it, the substitute is certainly the most unsuited, both from education and experience.

The paper is a careful resume of the causes and measurement of heterophoria. The only criticism that I am able to make might be summed up in the fact of its completeness and accuracy. The author's

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modification of the von Graefe test for estimating the nature and degree of heterophoria appeals to me as a useful aid in the adoption of means.

It has been truthfully stated that in some respects much of the literature on the subject is a hindrance rather than an aid. To be more definite, it might be added that authors have had too often in mind the advertising and sale of expensive apparatus rather than the enlightenment of the reader.

Another feature that has tended to discount methods of treatment in cases of heterophoria has been the promiscuous and wholesale operative procedures that have been advocated and practiced by leaders in ophthalmic practice. When it is known that a writer and leader has performed as many as twelve partial tenotomies on a little female patient whose parents possessed the ability and inclination to pay as much as $1,700 for the same, in the fond hope that a subsequent operation would finally be attended with relief, there is small wonder that mischief results, and that tenotomy is viewed with suspicion, both by profession and laity. Dr. Wilson, in pointing out the fact that discrimination must be used in the treatment and that the cause of heterophoria must be ascertained and verified by all the means at hand before tenotomy be done, has placed the subject upon a higher plane and one that must correspond with observation and experience of probably every member of the Society.

In speaking of the disturbance of function it might be well to look beyond the eye and its immediate muscular and nervous connection for the causes of heterophoria. It has been my observation that not infrequently a lacerated cervix may be the sole cause of heterophoria, and that no treatment as a result of the most careful measurements and the adaptation of prisms will be of any avail until the laceration has been properly treated by the gynecologist. After the results of trachelorrhapy have been secured no treatment for heterophoria may be demanded. Heterophoria may likewise result from reflex irritation induced by uterine, ovarian, rectal, intestinal, gastric, and other lesions. Anæmia, or even eye exhaustion, may induce various forms of heterophoria and relief can not be secured until the primary cause be removed? Then, very often there is no need for further treatment, as the effect is found to have disappeared with complete removal of the cause. After an experience with cases of this type I often call a halt to my own efforts at special treatment. I change my view-point from that of the eye to that of the patient, with very much benefit to the latter and to the heterophoria.

Dr. W. Strong: For the third successive year I find myself before this Society discussing the same subject, and it certainly appears to me that by this time my views upon this particular topic are well known to you. At the same time I think we are to be congratulated upon the fact that this subject is constantly before us, it being a most important one, a condition which we meet in our everyday practice and one upon

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which we still find a wide diversity of opinion regarding its treatment.

It is a very difficult matter to discuss such an able paper as the one presented by Dr. Norton, more so in view of the fact that my opinions and practice so thoroughly coincide with those which he has mentioned. The paper well defines the advantages and limitations of the non-operative treatment of heterophoria, and coming from one of so much skill and experience must command the respect of even the most enthusiastic advocate of routine operative interference in these cases.

The greater my experience with the treatment of these cases the more I am convinced that with few exceptions they are best treated by non-operative methods. I thoroughly agree with Dr. Norton when he states that operative measures are to be considered only after all other methods have failed.

Too much stress can not be laid upon the necessity of employing a cycloplegic in the examination of these cases, for without such an agent it will be impossible to accurately correct the refractive error present. In my opinion the careful correction of the refractive error is the most important step in the treatment of these cases, it being always followed by a decided improvement, and in many cases it alone will secure for our patient the desired result.

The advice given by Dr. Norton concerning the treatment of those cases in which a heterophoria is present, but unaccompanied with any distressing symptoms, is both wise and important. In such cases we have no good reason to interfere, especially in view of the fact that such a course may lead to the appearance of distressing symptoms. Theoretically, it might appear desirable to attempt to secure orthophoria, but practically it is not so.

The suggestion regarding prismatic exercises being conducted at office is a very good one. I have had no experience with the use of electricity in the treatment of these cases.

Dr. E. J. Bissell: In Dr. Suffa's paper there is very much to recommend it to us, and yet in hearing the two papers, the non-surgical treatment and the surgical treatment, I was impressed with the similarity of them. It was a good deal like the Irishman's opinion of the vote—six on each side—"there was a majority on both sides." The paper is thoughtfully conservative. There are many men who pride themselves on being conservative, where it is a mixture of ignorance and indifference to the subject. However, this paper is THOUGHTFULLY conservative.

I am in hearty accord with the author's method of complete tenotomy, when surgical work is necessary. If you are going to actually change the balance surgically, you must completely sever the tendon or keep hacking away at it for an indefinite number of times.

And yet in a spirit of kindly criticism of this paper, there are some things which seem to me lacking. It lacks some definite, clear-cut lines for surgical work. I understand these papers were supposed to be exhaustive on the subject. As I read the paper and re-read it, I tried to

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find out just how I could go to my work and more accurately select the surgical case. It is a principle well recognized that we should correct refraction. It seems to me that the main point that is lacking in this paper is emphasis upon general conditions. I believe we are more and more bound to consider the powers of the nerves, innervation, the general nerve force of our patient, general muscular development, occupation, and a great many general factors. To my mind they are more important than whether the patient has five, or seven degrees of some form of heterophoria.

Another point that I would criticise is the method of testing. The doctor's test has the merit of simplicity, but it does not seem to me to have the merit of up-to-date scientific accuracy. I should myself hate to trust my opinion upon the motion of the eye in hyperphoria. I, of course, can't say what the doctor's ability is in watching the slight movements of the eye in hyperphoria, but it seems to me that there are cases of hyperphoria that would escape observation by that simple test. Furthermore, I find in this no mention at all of the actual power of the individual muscles as far as they can be separated. When you come to the surgical work on the muscles, I do believe that Dr. Stevens has given us an instrument in the tropometer which is of value. I think it is of value in deciding the point whether you are to do an advancement or not. If a man is going to take a position which does not require any surgical work, he can dispense with the tropometer, but if he enters the surgical field, he must use some such method, and I believe the tropometer completely fulfils the condition. Furthermore, we have not in the three cases recorded the slightest intimation of the powers of accommodation or of convergence, and many points which seem to me necessary in differentiating surgical from non-surgical cases.

Another point of criticism would be, that the doctor's practice in two of the cases recorded was not quite in accord with his preaching. The first case was one of quite a high degree of hyperopia, coming from another oculist, who in one eye had not given him any astigmatic glass. Dr. Suffa gave the astigmatic glass and decreased the esophoria, which I believe all acknowledged is good practice. But at that point he ought to have determined the actual refraction of the case, because it is clear that he was in the dark himself. Two years after he changed the prescription; two years after that he left out the astigmatic glass and came back to the first doctor's opinion, and two years after that came back to the astigmatic glass. Such a case as that lacks accuracy when you are going to deal with heterophoria. In the second case, we have no intimation of the general condition of the patient; a mydriatic was not used until some considerable time, I think, about two years after he had commenced treating the case, and consequently there was some material change in the axis of the cylinders. I do believe when we come to a case of heterophoria we should start out right and find out what the refraction is.

There are two questions which I would like to ask the doctor. He says, in speaking of a certain condition, he believes that to be a true

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insufficiency. I, for one, would like to know just what he means by true insufficiency.

He says he does not operate for hyperphoria, unless it is over six degrees. Why? Now, it is the exception that I find hyperphoria of six degrees, and, furthermore, it is quite universally conceded that of the heterophoria, hyperphoria is perhaps the most annoying. Prisms of 4° or 5° base up or down in my experience are not easily worn by patients, and I believe that to place a definite degree, say six degrees, as a limit in hyperphoria for surgical work is wrong.

Dr. Jas. A. Campbell: When one is called to discuss the views of an esteemed friend, it is certainly gratifying and pleasurable to find one's self in perfect accord with the views expressed. And so, in Dr. Lewis' admirable paper there is but little for me to criticise, for his experiences in the directions discussed, as outlined by the cases given, are, I am sure, familiar pictures to every observing ophthalmologist of extended practice.

That heterophoria is an important factor in varied forms of physical, functional and organic disturbances, few will deny. The methods recommended for its correction, however, still remain a legitimate subject for difference of opinion.

While it may be a fact that true heterophoria is a congenital asymmetrical unbalance of the eye muscles, and hence a harmonious readjustment, by surgical means, is the necessary treatment, as claimed by Dr. Geo. T. Stevens, I am quite convinced that a large percentage of the cases of loss of equilibrium of the eye muscles we meet do not come under this heading. The majority of cases of heterophoria, which I have seen, have been associated with optical anomalies. So constant has this been, that I am inclined to accept it as the one great cause. In repeated cases I have seen the same startling and gratifying results follow the proper correction of optical errors, which are so vividly outlined in Dr. Lewis' paper; though many times, for self-evident reasons, the result is slower than by the radical sudden change which follows the operation.

In the doctor's first case we see that the glasses worn were wrong; an irritating and aggravating element in muscular eye strain. The hypertrophy of the inferior rectus spoken of was probably the direct result of its continuous effort to overcome the existing optical error, just as we find in hyperopia a tendency to convergence from the overexercise of the associated action of the muscles of accommodation and the internal recti. When taken early enough this condition is perfectly corrected by suitable glasses.

I am of the opinion that hyperphoria causes more forms of general distress than the other varieties.

Why the disturbances from heterophoria should be so varied, in their manifestations, as yet admits of no definite explanation, for the same heterophoria may produce radically different reflexes in different subjects, or even in the same subject at different times. There must be some nervous predisposition in the person afflicted, to explain it.

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I find myself less inclined than many to operate on heterophoria, because I firmly believe that it is more often a *result*, and not a *first cause*, and in many cases I have been fortunate enough to remedy it by carefully seeking and correcting the prime cause.

If we trace out the intimate blending and interpenetration of the cerebral, cerebro-spinal and sympathetic systems of nerves, their mutual influence, one upon the other, would seem to be not phenomenal, but almost an anatomical and physiological necessity; therefore we can readily see how such reflexes may be motor, sensory or functional, according to the direction the perverted nerve action takes.

A general nerve and muscular depression is a frequent cause for heterophoria. Systematic exercise, fresh air, and a general toning up will often do wonders in such cases. I find great benefit by a regular use of prismatic exercise, giving the patient the proper exercising prisms to use twice daily, ten to fifteen minutes at a time.

Dr. Lewis' paper is full of interest, not alone because it is "a well-told tale," on an important topic, but also because it lifts us out of the monotonous staleness of "sore eyes," granulated lids and physical corruption into that higher and more delightful region of spiritual laws, vital forces and life's mysteries, where the thoughtful man loves to revel.

Dr. John L. Moffat: Dr. Norton has made a very wise suggestion; it is a very practical point. When he spoke of plus glasses increasing exophoria, he said nothing about the distance between the glasses; this has a great deal to do with it. He must have meant that they were properly centered.

More harm is done by ordering prisms to be worn constantly than by operating. The other day I ordered a pair of prisms to be worn in combination with other glasses—the first time I have done so for years.

Wearing prisms but confirms the muscular weakness. The proper use of the prisms for cure is to stimulate and make possible the fusion of the images. I agree with Dr. Norton about the office-drill with prisms. One patient, with whom I was very explicit as to how he should drill at home, had been holding the prism pointed in the opposite direction; instead of strengthening the internal rectus he was holding the base inward. The man did not return until he had been set back very materially.

Some patients are quick and some exceedingly slow in acquiring the knack of exerting but one rectus. At home there is great danger of ignoring one image, despite our cautions.

As to the application of electricity, I have used it with benefit—Galvanic and Faradic—in some cases that even prism drill did not help, and in many cases supplementing it, but I try to apply the electricity to the individual muscle; I do not use the eye-cup or an electrode, covering the whole eye.

Dr. Norton did not speak of trouble with the oblique muscle. I have one very obstinate case of paresis of the right superior oblique due to spinal trouble of long standing. The patient, who goes on crutches,

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came to me with such a vertical diplopia that she could hardly travel in the streets or get off a car; she habitually carried her head tipped sideways and forward. I ordered home drill by fixation and gradually straightening the head. She does that and, I think, is getting better effect than when I drilled her with prisms in the office. I do not believe I will ever be able to cure her.

Dr. E. J. Bissell: There is one point in the paper I should like to take exception to and that is that in cases of hyperphoria, after prescribing prisms, we can absolutely determine that their asthenopia is from the hyperphoria and can let the patients decide whether they will have exercise, wear prisms, or have an operation. I think it has been shown in exceptional cases of hyperphoria that the wearing of a prism sometimes will not give relief. That has been explained upon the theory that in wearing prisms the eye must necessarily, if there is binocular vision, be out of the horizontal plane, and the lateral muscles are working at an unusual angle. The wearing of the prism may not demonstrate in these cases that the hyperphoria is or is not the cause of the trouble. One point regarding the exercise. I am heartily in sympathy with the work that the physician does in the office with exercise, but upon the intervening day in exophoria I have the patient use the dot exercise at home. I use a small white dot upon a black background, having them hold it at 2 feet distance, and gradually approach the eye to within 6 inches. This is only for exophoria. I have them begin, usually, by making the convergence five times; that they will continue for three days, and then I increase it to eight and the next to eleven, increasing it three every three days until they get it about twenty times, giving them instruction that if they get to fifteen or any number and find any sense of fatigue to drop about five times. I find this helps out and stimulates binocular vision, which is important in these cases of exophoria.

Dr. F. D. W. Bates: As regards the development of muscles by exercise with prisms, I must disagree with the writer. Some seven years ago I wrote an article in one of our journals advocating this method; but since then have changed my mind, and believe it is a mistake.

We can overcome exophoria and hyperphoria, apparently, in that way, but we do it at the expense of the general system; we have an irritation of the nerve centres from it and various troubles resulting, although they may not show themselves immediately.

One in point was mentioned to me last night, a case of paralysis agitans, with numbness of the right toe. It had continued for four years and was cured immediately by the performing of a tenotomy on one of the external recti muscles—exophoria having been discovered. In that case, if they had tried to overcome the exophoria by developing the internal recti muscles, the paralysis agitans would certainly have been increased. We do not often meet with cases where the immediate results of strain upon the muscles of the eye can be seen, as in the case mentioned; but I am absolutely certain that the trouble would have been increased by developing the internal recti muscles, and such being the

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case proves conclusively to my mind that overcoming heterophoria by developing the opposing muscles is a mistake. I believe that a large percentage of the cases of esophoria we run across are due to spasm of the internal recti muscles; and consequently I am very careful about operating upon an internal rectus. I have no hesitation whatever in operating upon an external rectus if I find a marked degree of exophoria, for I think we never have spasm of that muscle; but in esophoria or hyperphoria I think we are often at sea.

Dr. W. B. Kreider: I would like to ask the doctor how he would treat a case of exophoria of twenty degrees at distance and thirty degrees at the near-point. After operating, an exophoria four degrees at the distance and of ten degrees at the near-point remained, and yet there was diplopia at an angle of forty-five degrees on the side of the muscle operated. These anomalies occurred to me, and I would like to know the treatment of such a case.

Dr. G. A. Suffa: I can not agree with Dr. Norton in allowing cases of hyperopia with exophoria to overcome their manifest hyperopia. I fail to see wherein two wrongs can make a right. These cases, in my experience, do better by having their manifest hyperopia corrected, combined with prismatic lenses if necessary, thereby being obliged to overcome both errors. Certainly the faculative hyperopia will become total in time, and during the transition stage the ability to correct the hyperopia becomes more difficult and the asthenopia more marked as this inability increases, and consequently during this increasing inability fatigue may increase the exophoria. I always endeaver to establish equilibrium in accommodation and convergence, aiding nature rather than putting extra demands upon her.

Dr. E. D. Brooks: I would like to ask the doctor if he uses the Wilson phorometer in developing the weak muscles in cases of heterophoria. I think the instrument is designed for that purpose, as well as for detecting weak muscles. I gathered from his paper that he generally uses the prisms. His method of using the prisms does not quite correspond with mine, and I presume his is the better way. My plan is to put on the trial frames, insert as strong a prism, base out, as can be fused, increasing the strength as fast as can be borne, while gradually increasing the tension on the muscles by adding other prisms with the hand and removing them as soon as they are overcome, quickly adding the next higher degree, and so on, until the limit for that sitting is reached. This is for the internal recti. A sitting varies in duration from ten to twenty minutes, according to the condition of the patient. Patients vary in this regard, as well as in the number of sittings requisite to produce orthophoria. In treating for esophoria or hyperophoria, it is my custom to put in the trial frames the prism that increases the heterophoria, and of as great strength as can be overcome, allowing it to remain about three minutes and substituting the prism next stronger, continuing this process during the fifteen minutes of the sitting. By these methods of exercise I have been able to bring about orthophoria, and relieve the asthenopic symptoms consequent upon the heterophoria, in nearly all my cases. My

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work has been largely among students, and my success may be due to the youth of my patients. Any refractive error for distance is corrected, by putting the suitable lenses in the trial frames, before beginning each sitting.

Dr. F. Park Lewis: I am beginning to feel with Dr. Moffat that the use of prisms is bad, if given for the purpose of relieving muscular tension; but there are two ways in which prisms can be employed, and I have found that one of the most satisfactory methods is the reverse of the usual plan. I employ a relatively weak prism, with the base toward the stronger muscle, and have it worn for several hours at a time, or continuously, as the case may require. In that way we get constant exercise of the weak muscles. Such a prism I allow a patient to wear for three or four days, or a week, modifying it as conditions require. There is no measure that I have adopted that has given me more relief in conditions of weak externus than this one.

Dr. F. D. W. Bates: Dr. Bissell has gone into the subject pretty thoroughly, and there is little left for me to say. I am not a tenotomy enthusiast by any means. I never cut a muscle unless I am pretty certain it is necessary and the only thing that will accomplish the object; and I may add that I have never had reason for regretting having operated upon a muscle as yet, and hope I never shall have.

I will mention one case in detail where I have hesitated for nearly three years about operating. The case was sent to me by a physician who had been treating her for some time for various symptoms, though neither he nor any other physician who had treated her had been able to diagnose her case.

She was a nervous, energetic person of an hysterical nature, subject to hysterical convulsions. Sometimes these attacks would come on quite frequently, when she would at times remain unconscious for hours at a time. She had some irregularity of the heart, with considerable œdema of the legs; but the physicians that examined her said there was no organic trouble of the heart.

When I examined her eyes I found myopic astigmatism, about — 2. D. ⌒ — .50 D. cyl. O. U., and the first time I examined the muscles found an exophoria; she could overcome a prism of 10° base in. I gave her a pair of prismatic glasses to wear until she came in again, 6° divided between the two eyes base in. She came in again the next day with convergent strabismus—both eyes being drawn in toward the nose, and she seeing everything double. This condition of tonic spasm continued for three months in spite of everything I could do. I paralyzed the accommodation, put on prismatic glasses, with bases in and bases out; but all to no avail. Finally I put on the glasses I prescribed at first, compound myopic cylindrical glasses, and in the course of two or three weeks the spasm began to let up so that at times during the day the eyes would appear perfectly straight, and at other times converged.

Well, it took about a year before the eyes remained in a normal position; but I have never since then been able to get evidence of exophoria. I cannot examine her eyes for two minutes at a time, but that the spasm

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will set up, though it will be of short duration. Now, my opinion of the case is that it is one of exophoria; but though I have tried all methods of examination—including the phorometer, tropometer and Maddox rod—I cannot get any evidence of the same. I was strongly tempted to operate upon the external muscles, or one of them, and take the chances, yet hardly felt justified in doing so without some advice. I wrote to Dr. Stevens in New York, describing the case to him minutely, and asking his advice. He replied, saying that it would be a great mistake to operate upon the external muscles; consequently I have not operated, and the case remains in *statu quo*. Now, we have all seen cases that have been operated upon for convergent strabismus, in which the eyes have turned outwards after the operation—though perhaps not immediately after—and it has been said that the eyes have been operated upon "too much." The fact is that those cases of strabismus were due to spasm of the internal recti muscles, and those internal muscles should never have been operated upon at all; exophoria was no doubt the true condition. I am always very careful about operating in cases of esophoria or hyperphoria, as we have spasm in a great many of these cases, which may lead us to operate upon the wrong muscle.

Dr. C. J. Swan: As Dr. Bissell has very well said, the correction of the refractive error is an important feature. There is one point in the correction of the refractive error to which I would like to draw attention. It is, with regard to the axis of the cylindrical glasses prescribed. Now, it is a very easy matter to make a mistake of five or ten degrees in the axis of the cylindrical glass, and I have had several cases of heterophoria that have been relieved by even a change in the axis of five degrees. The use of the ophthalmometer is of great assistance in determining the axis.

With regard to the time for operation, and the cases that demand operative treatment, we ought to demonstrate at once that these cases will not yield to other methods of treatment. It seems to me important to have some means of deciding early, without going through all the methods of exercise, use of galvanism, faradism and drill by prisms, as to whether we have a case on hand that will probably need operative interference. In my experience I have found where I have obtained diplopia simply by the use of a colored glass before one eye, an operation has always been found necessary.

Dr. F. Park Lewis' remarks, in regard to the reverse prism, interested me a great deal, but I confess that I can't quite understand the reason of cure, or of the relief of the symptoms. It certainly puts an added amount of strain upon the eye if the eye is already strained, and it would seem to me something like giving a minus glass in hypermetropia. I would like to ask Dr. Lewis to give us this work in a little more detail, so that if it is a useful or practical measure it may be better understood.

Dr. G. W. McDowell: The explanation of the result of Dr. Lewis' success in relieving weakness of the external recti muscle with prisms with the base in seems to be rather an obscure matter, because, as Dr.

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Swan has said, it seems like curing hyperopia by putting on a concave glass. You simply increase the difficulty. I think that a possible solution of the matter may be, that the apparent esophoria is a real exophoria, the esophoria being due to a spasm of the internal rectus muscle of one or both eyes in the endeavor to correct the exophoria that was previously present. As we know, some cases of hyperopia in the endeavor to correct that condition will produce a spasm of the ciliary muscle, causing an apparent myopia. Similarly an exophoria may masquerade as an esophoria. This would be relieved by putting on a prism with base in correcting the real defect, which is the reverse of the manifest error.

Dr. T. M. Stewart: I also have had good results from using prisms with bases in in exophoria, though the method I have followed is somewhat different than that just referred to by Dr. Lewis. In exophoria I prescribe prisms, bases in, of such strength that the patient can fuse; using a prism on each eye in the test. In a week or less I find such patients often fuse with a higher degree of prism, and I increase the strength week by week, dropping back to the next weaker pair, if symptoms are aggravated by the higher degree. I have seen the exophoria increase in amount under this treatment to the operative degree. I have seen other cases subsequently obtain perfect comfort with a weak prism in for constant use. I have also observed a decrease in the exophoria under this plan. In still other cases not much change has taken place, but vision in nearly all cases has improved and the correcting lenses after such a course of muscular treatment would be somewhat different from before, myopia decreases and hyperopia increases. The effect seems decidedly beneficial to the ciliary muscle. The prisms are worn constantly, and the treatment carried out until the exophoria does not fluctuate. The troublesome cases are those of exophoria with weak adduction. Prismatic exercise in the usual way is then indicated, with attention to the general health, and tenotomy later. My records show improvement in vision from $^{15}/_{80}$ to $^{15}/_{15}$ without glasses in each instance, and many such cases have been observed.

Dr. John L. Moffat: We must not forget that reflexes show themselves in the eye the same as in other parts of the body; that may be the reason we fail in some cases. I have known cases where the spine was the cause of the eye trouble, most commonly spasmodic cases, sometimes asthenopic. Was it not Dr. Woodward who called our attention to the fact that astigmia is sometimes muscular (spasmodic)? *Lilium tigrinum* I have seen give relief in asthenopia, also *Argentum nitricum*. It is a question whether it would be worth while to send that patient to a gynæcologist to find out if there was any ovarian trouble back of it. A dentist told me of a patient sent to him for pain in the ovary which her physician believed to be reflex from the teeth. He found nothing the matter with the mouth, but after using the electric light thought one filling suspicious enough to take out; immediately upon penetrating the tooth the patient clapped her hand on the ovarian region where she

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felt pain—not in the tooth. There was no relapse. In many instances we must cure uterine, ovarian or spinal trouble in order to relieve eye symptoms.

As to the operation, it was not spoken of except once by Dr. Bissell, but I think we all recognize that we should not operate an eye that we feel we don't know thoroughly, and we can't know an eye thoroughly unless we know the power of each muscle in the eye, and it is a question of measuring the power of each muscle before operating.

I omitted to speak, in my discussion, of Dr. Norton's paper of prism mobile in drilling the eye. I used that in measuring the strength of muscles and I have found it very valuable in giving the prism drill to the eye in cases that could not be helped with anything else.

Dr. G. M. Haywood: I treat esophoria by putting on a strong hyperopic glass, and internal remedies. I find *Ruta* in muscle-strain effective, 1st up to 3d. I had a lady from Boston who had 6 degrees of esophoria. She accepted without a mydriatic + 1.50 dioptre glass. I prescribed + 1.50 dioptre glass for constant use, endeavoring to relieve the esophoria. She came back and said that she was pretty nearly dead from eye-strain. She said it was impossible to wear them—"I can't continue by present business with these glasses." I reduced the glasses to + .75 of a dioptre. She only remained in the city a couple of weeks and so I could not follow up the case. But I would like to know of Dr. Norton whether I did the proper thing in reducing the strength of the glass and gradually increasing it as she could stand the glass?

Dr. C. G. Fellows: I think we sometimes get more out of our ignorance than we do out of our knowledge. If we know it all, we do not hunt for something better. If we are ignorant about the use of prisms and our knowledge is not complete, that is the time we burn midnight oil or come to Washington.

I want to ask Dr. Norton, whether his square prisms work better than the ordinary round prisms; and of Dr. Lewis, whether there can be nerve-strain from lack of fixation when the eyes are deviated more than 20 degrees, whether one eye is doing better work and how the nerve-strain comes, and whether we should operate by graduated tenotomy? I wonder if some of the oculists are not curing their patients by hypnotism more than by the scissors; whether a great majority of our methods—prismatic, electric applicators or even operations—are not hypnotic in their results. I have patients who are sent to me because some former patients who are cured believe in me no matter what I do; and I have other people who do not believe in me, no matter what I do. Now, I believe that the personal equation has a great deal to do with it and when a man gets the confidence of his patient enough to allow him to operate twenty-five and thirty times, as we read about in the journals and conventions, snipping one side and the other and not knowing what they do, that patient has enough confidence in him to let him do anything. Therefore, they have confidence and believe that this is going to cure them, no matter what is done. I believe this is the

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explanation of some of the high potency cures which we laugh at. I operate and I think I am a conservative man; I fail to operate and I believe that I am a radical man. I prescribe and I don't prescribe, according to my individual cases and experience.

Dr. H. D. Schenck: For over ten years I have followed up this exercise of the ocular muscles at the office; which I early made up my mind, after a number of trials of having the exercise done at home, was the only method which would give satisfactory results. A very large proportion of the cases of muscular insufficiency which I have met have been relieved in this way. I think there is a great deal in Dr. Fellows' hypnotism, mental suggestion or whatever name you may call it. Regular drill of the case has a most salutary effect on the patients and tends to keep their attention centered directly on the work—and it is work for a patient to exercise the eye muscles. I have not treated the cases as frequently as has Dr. Norton; my general rule being once in three days instead of every other day. I have successfully exercised cases not only of exophoria, but of esophoria and hyperphoria. In a great many cases where there were finally brilliant results, it took months of steady work to fully relieve the symptoms. Very few of the cases were brought to orthophoria, but they were relieved of their asthenopic symptoms and remained perfectly comfortable with as free use of the eyes as they desired. I believe adduction, abduction and sursumduction should be measured in every case, as they give valuable indications for the treatment where it is needed and furnish the most reliable data for making a prognosis in these cases.

Dr. A. B. Norton: There has been so much said on the subject that it would take a week or two to cover it all. I will commence, however, with Dr. Fellows' remarks, regarding the personal equation. I think that the personal equation is one of the greatest factors in the success of special, as well as general, practice.

As to square and round prisms, I use the square because they are so much quicker brought into place; it takes a moment of time to adjust the round prisms, and my plan is to exercise by quick changes of prisms. The large square prisms are also more convenient to hold.

As to Dr. Haywood's case—if he had paralyzed the accommodation with a mydriatic, he would have found his patient would have accepted a much stronger glass, which would have corrected the esophoria and relieved the symptoms. As he could not use a mydriatic he did right in increasing the strength of glasses as fast as possible.

Dr. Stewart's remarks in regard to the relation of accommodation and convergence, I regret, has not been spoken of more generally in the discussion of my paper. It is a point that should be emphasized. There is a positive relation between accommodation and convergence. You cannot accommodate without convergence and you cannot converge without accommodating. This should always be borne in mind in prescribing glasses, as in many cases you can correct your esophoria (or convergence) by prescribing strong convex glasses; on the contrary, in

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exophoria strong convex glasses will increase the trouble every time.

In regard to the first case reported by Dr. Suffa, I believe it was a case of spasm of the accommodation, and that an examination under a mydriatic at first with the proper correction with lenses would have solved the problem at once. From the report of his case I do not believe the doctor really knew where he "was at" any of the time. His method of testing heterophoria does not appeal to me as being accurate.

Dr. Campbell recommended exercise twice a day for his patients, ten or fifteen minutes at a time. This, I think, is too long and too frequent exercise; it over-tires and over-exercises the muscles.

In regard to these reflex conditions due to eye-strain. Every one of us has seen any quantity of cases of nervous dyspepsia, dysmenorrhœa, chorea, epilepsy, etc., etc., that have been entirely relieved by correcting eye-strain, so that it cannot be emphasized too much.

Dr. Lewis reports cases where he prescribed, with relief, prisms for constant use that increased the amount of heterophoria. I believe with Dr. McDowell that these are cases of spasm, as no other theory will explain to me relief from glasses that increase the trouble. In these cases we must take time to examine them day after day, over and over and over again. In this connection I have a case in mind that had been a patient of my brother's a long while ago. At that time his record showed it to be a case of exophoria and he treated the muscles by exercise with prisms with more or less benefit. After my brother's death the case drifted into other hands, when the symptoms returned and he came under the care of another oculist, who exercised the muscles for esophoria and prescribed strong sphero-cylindrical glasses with no relief. He returned to me within the last three months and my first test showed an esophoria of high degree, but on watching the eyes I noticed that they moved inward on covering first one eye and then the other. More careful and prolonged examination with the phorometer finally revealed a rather high degree of exophoria. The case was one of spasm, the real condition being exophoria. Combining prisms base in with his astigmatic glass promptly relieved my patient. That condition of spasm of the muscles I believe is perhaps not sufficiently considered or recognized by Dr. Lewis. On the contrary, I believe it is too much emphasized by Dr. Bates. He says he would not dare to cut an internal rectus on account of the danger of tonic spasm. I do not believe that we have any such number of spasm cases as Dr. Bates would lead us to believe. Dr. Bates also criticised my paper on the method of exercising the muscle. He does not believe in the theory of exercising muscles on account of its making an irritation on the nerve centres. Now, I cannot understand how we can get any harm in restoring any muscle to its normal power. These muscles are weakened; they are not up to their standard. All our records and publications used to consider twenty perhaps the normal power of the internal rectus. Today many of our text-books record them at 30, 40 or 50 degrees. I believe the normal in many cases to be 70 or more. We know that we can strengthen and benefit other weaken-

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ed muscles by exercise. Why should we not get the same benefit in the eye? As to the cutting of muscles, I do not believe the Creator made 99 per cent. of us with abnormally inserted muscles in order that oculists might cut them. I believe the majority of these cases are cases of muscular weakness, especially of the internal recti. The internal recti in my opinion are far more frequently out of order than all the other muscles. These are the muscles more generally abused than any of the other eye muscles. The constant overuse of the eyes at near work, especially when the whole muscular condition is physically weakened from sickness, causes, in my opinion, a large proportion of our eye cases. Dr. Brooks asked if I use the Wilson phorometer to exercise the muscles. I do not. While I think the Wilson phorometer is intended to be used for prism exercise, my impression is that its power is limited and that we can only exercise to 30 or 40 degrees with it. I usually run my prism exercise up to 70 odd, and as my assistant, who does all my prism exercise, gets along better with the square prisms, we have not used the phorometer.

As to Dr. Kreider's case, which I understood to be one of exophoria of 30 or 40 degrees. I believe that that case was one of real divergent squint and should not be classed as a case of exophoria. The probabilities are that the patient did not have binocular vision previous to the operation and often in these cases, when you correct the squint, they will for awhile complain of diplopia, which is usually but temporary and gradually wears off in the course of a few weeks or months.

Dr. Bissell's criticism objecting to my allowing the patient to decide in cases of hyperphoria or esophoria, whether he will try to have it corrected by exercising the muscles, wearing prisms, or by operating, I do not allow my patient to decide until I have demonstrated to my own satisfaction, and to the patient's, that his symptoms are caused by the condition of his ocular muscles. This fact I prove to them by having them wear the correcting prisms long enough to get positive relief of their symptoms. Then it is a question for them to decide whether they prefer relief by continuing to wear the correcting prisms, undergo a long course of treatment to correct the trouble by exercising with prisms, or get the relief by operation. My advice is to continue to wear the prisms as long as they give them relief. I find that somebody has criticised the constant wearing of prisms. I use prisms for two purposes: First for exercising and toning up the muscle that is weak. In that case I do not believe the prism should be worn, but used temporarily to exercise the muscles as I have described in my paper. I do not believe you can tone up a muscle by wearing a prism. You are more apt to put a strain on the muscle and cause greater weakness. Secondly, I use prisms to correct heterophoria when they have to be worn constantly as a crutch. Then they are to be worn with the base over the weakened muscle. Wearing prisms in this way will as a rule be permanent, but often you will have to increase the strength of the prism as more of the trouble becomes manifest. Occasionally it will increase,

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and you can remove them, after the patient has worn them for six months or more.

In answer to Dr. Moffat's question about the centering of lenses, I prescribe a great many decentered glasses, to get the prism effect. As to the use of electricity, which somebody has spoken of. I am using now static electricity with greater satisfaction than from any other form. I believe I am getting better results with static electricity than from galvanism, which I prefer next to the static and better than Faradism. As to the oblique muscles, I do not know how to treat them. I have lain awake nights and burned the midnight oil to learn how to treat the oblique muscles, but have not found out.

Dr. G. A. Suffa: First, in regard to the card test. My reason for using this test in the measurements of heterophoria was simply because of the inacuracy of measurements by the phorometer and various other tests which produce diplopia—an abnormal condition, one which all eyes strive to overcome. Thus the inacuracy and the difference of the readings in the low degrees at different sittings is shown. I do not think that I am any more expert in the use of the card test than any one can become by practice. The smallest errors can be detected, both by the patient and the physician, which is one great factor in its favor, not depending entirely upon the patient's statements. The tropometer in an instrument I do not make use of. I understand its principle, but prefer to observe both eyes while in rotation, consequently use a pencil or small object. In heterophoria one or both eyes may be tremulous in certain positions, or one may turn in the direction of the strong muscles when in partial or extreme rotation. All these points can be observed much more readily in this way than with the tropometer.

While it is the ideal method of testing all refractive errors under a mydriatic, in office practice it is often impossible. Such was the condition in case 1, who was employed in a bank and could not give up the use of his eyes for the time required at the first test. After the first test I was satisfied that I was dealing with a condition of the interni that would be best treated by correcting the hyperopia as it became manifest, together with prismatic lenses, until all latent hyperopia had become manifest without the use of a mydriatic. Question: What do you consider true insufficiency? I consider as true insufficiency all cases of acquired exophoria and acquired esophoria as over-developed interni; not insufficient externi.

The question has been asked if this case was not one of spasm of the interni. I can not think that spasmodic action had much to do with the condition; otherwise the degree would have varied at the different sittings, whereas there was a gradual lessening of the esophoria as hyperopia became manifest and was corrected. As previously stated, the action produced upon the interni while the ciliary muscle overcomes manifest hyperopia is cumulative, developing strong interni muscles

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more than spasmodic action, otherwise we would not have acquired convergent strabismus.

Dr. Bissell's disappointment that a definite rule for operation was not given is hardly well taken. Under the present uncertainty in this branch of ophthalmology it is utterly impossible to have any fixed rule by degrees of phoria alone.

Now, in regard to Dr. Norton's criticism that the case was one of exophoria instead of esophoria, I can not agree with him. That the case became exophoric finally simply proves that when all hyperopia had been corrected, that the cause of the esophoria was removed, that the balance was slightly the other way, does indicate that the original proper state was exophoric.

Dr. Bates' statement that the cases of strabismus that had been overcorrected by operation were not cases of strabismus, or even esophoria, I can not consider as correct. There in all probability were cases that had been operated upon without taking into consideration the hyperopia. Muscular equilibrium produced by operation, with latent hyperopia, or hyperopia of any form existing, must, when the hyperopia is no longer under the control of the ciliary muscle, become exophoria or external squint. These cases should have been undercorrected if operated upon at all, and their hyperopia should have been corrected with lenses.

Dr. F. Park Lewis: First, our books will have to be re-written in regard to the relative strength of the ocular muscles. The old assumption that the externus would measure eight and the internus would run up to sixty and seventy degrees, the superior and inferior recti to three, is not borne out in practice. It is rare to find in normal eyes which are perfectly comfortable such a balance of muscles as the old authorities state were a standard basis of strength. I find that for the externus an abducting power of five degrees is the normal strength in a large majority of cases that come under my observation. Comparatively few of those whose eyes are comfortable and normal will have internal recti that will run up beyond 30 or 40 without developing them. The superior recti muscles vary. Very comfortable eyes have no more than one degree often, and they run up as high as four. I have known them to reach as high as five, even balance in each eye, with absolutely no discomfort. The authorized standard of ten years ago must be changed. There isn't such a standard; it cannot be taken.

The second point that I want to speak upon is Dr. Swan's question, which seems a perfectly proper and appropriate one, and the conclusion which would naturally be deduced from the statements is that a prism used in a method contrary to the accepted one would produce a result other than that which I have found ought to be produced. I do not accept Dr. McDowell's explanation. I do not believe we have a condition of spasm, and I will tell you why. In using the prism, we will say, in an esophoric condition, in which we have a single degree of esophoria, with base out, we will find in half an hour three degrees, and, correcting that, we have shortly four and five. We find if we put a

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prism with the base in in exophoria, we will frequently accomplish a like result. If we have an externus of three degrees and put a prism on with base in, we find a very much less, but appreciable increase, in strength in a short time in that externus, just as we produce under the teaching of Stevens esophoric conditions by correcting the manifest esophoria; so, when there is esophoria with weak externi, we can UP TO A CERTAIN POINT, increase the strength of the external rectus, but *beyond that we can not go.* It is now two or three years since I have been using this method with weak externi, and it has become my common practice. When I have a weak externus, always after a careful mydriatic test, if I find the refractive error is not marked, I come immediately to the conclusion that the disturbance is muscular and base my treatment upon this method of systematic exercise of the externi.

Dr. E. J. Bissell: Do you use a tropometer?

Dr. F. Park Lewis: I depend on the tropometer before undertaking any operative measures. In some cases it is very useful.

To third point: Do we get binocular vision with such excessive exophoria? This case was very remarkable, in that we had a tangible manifest trophic neurosis, resulting from eye-strain. In that case binocular vision was present, but only as a result of great effort directing at some object. Ordinarily in such cases we do not get binocular vision and consequently we do not get such marked eye-strain.

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A NEW METHOD FOR OBTAINING PUPILLARY DISTANCES OF SPECTACLE LENSES.

BY E. W. BEEBE, M. D.,

Milwaukee, Wis.

HETEROPHORIA must ever be a subject of the deepest interest to the public, as long as professional opinion continues to be so equally divided between its correction by lenses, and the more complex operative procedures.

There is no doubt but that some remarkable cures have been made by experts in muscle cutting, but to balance these, it is probable that scores of the less fortunate patients have cause to regret the hour they submitted to such an operation, though it were at the hands of the most skillful surgeon.

Undoubtedly there are many cases which have been greatly benefited by wearing correcting lenses, and we are also aware that there are a large number of others who have received but slight benefit from their use, but which we believe is partly due at least to inaccuracies of their adjustment.

There are still others who do not suffer from muscular deviations, yet who have had heterophoric, or asthenopic conditions, induced by wearing lenses for the correction of refractive errors, these objectionable conditions being brought about not infrequently when the lenses worn were perfectly adapted to the case, but which were set in frames in such a way as to bring about, or aggravate conditions which they ought to alleviate or prevent.

It is to a consideration of this branch of the subject I desire to devote myself at this time, recent study of which has led me to think it probable that this particular form of asthenopia will become less frequent, and heterophoria proper of moderate degrees at least successfully treated by lenses when we understand more thoroughly the desirability of greater accuracy in the adjustment of their pupillary distances, this being a subject which promises to become, I believe, a very important factor in the near future in securing more desirable results in the treatment of muscle unbalance.

There is probably no subject connected with ophthalmic science, that is less scientific, or more unsatisfactory in practice, than that relating

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to the adjustment of lenses of spectacles and eye-glasses for the prevention and relief of heterophoric conditions.

It is possible by the use of the phorometer to determine the amount, and kind, of muscle unbalance accurately, but how to adjust lenses for their correction, after the extent of the deviations are known, is quite another question and remains practically an unsolved problem.

Only the slightest consideration, I believe, is necessary to convince one that opticians more often err in the adjustment of lenses to frames, than they do in selecting them, and that suffering from this cause is of very frequent occurrence, an error of a few millimeters, out or in, being sufficient in some cases to cause the most troublesome and painful annoyances, a peculiarity of which is the fact that the error often remains undetected.

To look at objects through a lens without deviation of the visual lines, its optical center must be on a direct line between the object observed, and the eye of the observer, and this is not only true when looking through the lens at right angles to its plane, but also when looking through it obliquely, or at an angle, as is the case when lenses are worn for reading.

This law in optics is an axiom which is recognized by every refractionist, yet spectacles and eye-glasses which have been fitted in the usual way, and examined by this test, will be found to be defective, as such measurements cannot give correct pupillary distances for reading except possibly in a few cases of muscular insufficiency.

It may seem like presumption on my part to make such a statement, as this method for fitting reading lenses has had the sanction and acquiescence of the ophthalmic world, since spectacles were first introduced, but progress has been, and is being, made continually in every art and profession, and it is possible that perfection has not yet reached its limit in this.

Recent consideration of the subject leads me to suspect that a large proportion of the cases of refraction which have passed through my hands in the past thirty years were faulty in this respect, and that many of my patients did not obtain the comfort they should have experienced from their lenses, by reason of incorrect pupillary distances, and it is probable that my experience is not unlike that of many of my colleagues.

I ask your indulgence, therefore, for a few moments' consideration of this question, trusting that its discussion may enable us to arrive at a better understanding of some of its apparent defects.

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When obtaining pupillary distances for lenses, which are to be worn for distance, measurements are made between the pupils while the patient fixes his eyes upon a distant object, and when lenses are set to correspond with such measurements the conditions of the above-named axiom are fulfilled, as the optical centers of the lenses will be on a line between the object and the eye, hence there will be no muscular strain experienced when wearing them, demonstrating the fact that such pupillary measurements are correct.

In obtaining pupillary distances of lenses for reading, or near work, measurements are taken while the patient is looking at an object held at the reading distance, and if lenses are set to correspond with these measurements, the conditions of the axiom above mentioned are not fulfilled, by reason of the angle of the lens through which the object is observed, such measurements giving pupillary distances too great for the comfort of the patient in most cases and thereby causing him to look through the inner halves of his lenses, which by their prismatic effect, produces undue strain on the internal recti muscles, from an excessive amount of convergence.

The inaccuracy of this method of pupillary measurements I believe is conceded, and some writers in an attempt to remedy its defects, have advised the giving of reading lenses a few millimeters less pupillary distance, than is shown by the pupilometer.

But this rule which is in the direction of relief in some cases, is faulty in others, for *when* it should be applied, and the *amount* of such correction, cannot be determined, and one is as likely to apply it to cases where a narrowing of the pupillary distance will be a great annoyance, as to those where it will be an advantage.

An apparent discovery of a method was made by the writer not long since whereby the pupillary distances of lenses can be accurately obtained in all cases, the principle of which, has been embodied in an instrument, which promises to render the setting of lenses, as regards pupillary distances, a simple process, and believing it opens a new era in lens fitting, and that it will serve as a fruitful field for investigation and study, I herewith present it to the members of this association for critical consideration, it being the first time it has been shown in public.

For the want of something more appropriate, it has received the name of an Ortho-Phorometer, a liberal definition of which, means an instrument by which a balance of the extrinsic muscles of the eye may be preserved, when lenses are required to be adjusted for refractive errors.

The principle upon which it depends to secure correct pupillary dis-

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tances, is by centering the lenses separately, upon the object placed at the required distance.

This is accomplished in the right lens, by moving the eye from side to side, while the lens remains stationary, the optical center of the lens being thus obtained while looking through it obliquely, which is necessary in reading glasses.

In the left, the eye remains stationary, and the lens is moved until its optical center is on a line between the object and the eye.

To use the instrument, the refractive and muscular errors are first corrected in the usual manner, and the spherical, prismatic, or cylindrical lenses required or their combinations are placed in the lens holders, and the patient requested to close his left eye, and with the right one, which is usually the fixing eye, he looks alternately through, and below the lenses, at the vertical line on the card, which is placed at the reading distance, then by slowly moving his head from side to side, he will observe that at the optical center of the lenses, the line will be continuous, or the line which is seen through the lens will meet that seen below.

His head now resting against the instrument, he will close his right eye, and look at the line through the left lens, and note, if it is broken, or is continuous as in the right. If broken, the lens will be moved outward or inward, until the lines unite as in the right eye, then by alternately closing and opening his eyes, he will be able to determine when both are exactly centered for the distance required, or to which the lenses are adapted, the pupillary distances of which may be read on the instrument.

When desired to find the pupillary distance for lenses to be used on distant objects, two vertical lines are used, separated by the measured distance between the eyes of the patient when looking at a distant object, the right line being used for the right eye, and the other for the corresponding eye, this being equivalent to observing a single line at an infinite distance.

It is believed that but a moment's consideration is necessary to convince the most skeptical, that this method of arriving at the pupillary distances of lenses is the correct one, the eyes being centered separately upon the object, which is placed beneath and midway between the pupils and at the reading distance, it is evident that no strain upon the extrinsic muscles will be induced by the wearing of lenses, set in accordance with such measurements.

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An examination of a record kept by me since this instrument has been in use, has brought out some very interesting facts, not the least of which is, that our present and time honored method for obtaining pupillary distances for lenses is exceedingly faulty, and wholly unreliable.

From this it is believed that the attempts at correction of heterophoric conditions by lenses, which has so frequently resulted in failures, can be traced to this cause in a large number of cases.

There are so many ulterior influences attending pupillary measurements with the pupilometer, that if the method itself was not faulty, it would be very difficult to make the measurements with sufficient accuracy to obtain good results in intricate cases; such conditions as having the patient face the light, or shade, while making the tests, or by their intently looking at the fixing point, or by relaxing the accommodation at such time, will give results quite unlike, and in presbyopic cases, where the patient is unable to see the fixing object distinctly, a different pupillary distance will be obtained from that made while the reading lenses are in position, and these are conditions which the optician cannot control, except to a limited extent.

Therefore may we not hope that with the elimination of such imperfections in the adjustment of lenses to frames, better results will be obtained in the treatment of heterophoria be means of correcting lenses?

In not a few cases there will be found a difference of from four to six millimeters between pupillary distances, measured in this manner, and those obtained by centering the lenses with the ortho-phorometer, and these discrepancies are not confined to cases of heterophoria alone, but are among those where the phorometer shows no muscle deviation, leading one to suspect that the cause may be partly due, at least, to variable positions of the macula.

This instrument demonstrates the fact also that pupillary distances vary in the same individual, according to the strength of the lenses used, stronger lenses requiring a narrower pupillary distance than weaker ones.

Therefore the pupillary distance of spectacles and eye glasses require changing from year to year, as do the lenses in presbyopia, and measurements made some time previous are not adapted to a case for an indefinite period as has been supposed.

In ten per cent. of the cases of which I have the record, the ortho-phorometer gave a greater average pupillary distance than the ordinary measurements and in ten per cent. only were the measurements

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alike in both, while in eighty per cent. the instrument gave less pupillary distances, varying in amount from two to six millimeters.

It being conceded that centering of the lenses upon the object looked at, is a correct method for obtaining pupillary distances then 90 per cent. of those measured otherwise, are more or less faulty.

Of course a large number of these cases require comparatively weak lenses, and but little annoyance will be experienced in these by a few millimeters difference in pupillary spaces, and this fact has probably been a check heretofore upon progress in working out a more desirable system of measurements.

Some of the cases reported are of considerable interest, from the fact of the marked relief obtained when supplied with lenses which corresponded with the distances found by the instrument, one of them being

Case Six.—A presbyope having one-half degree of exophoria for distance, with pupillary measurements of two and three-sixteenths inches, with a history of muscular asthenopia of long standing; on decentering her lenses so as to give her a pupillary distance, to conform with the findings of the instrument, which was but two inches, she has had perfect relief from her former annoyance.

Case Eight.—A prominent educator of our city has been wearing lenses for compound myopic astigmatism for several years, requiring one pair of lenses for reading, and another for distant use, with prisms to partially correct an exophoria, which ranged from two and one-half to five degrees, according to his physical condition, his lenses having a pupillary distance by measure of two and three-eighth inches; vision was satisfactory with each pair of lenses, but he suffered much from asthenopia.

On fitting him with a single pair of lenses for all round work, and giving him a pupillary distance of two inches, as shown by the ortho-phorometer, his relief was prompt, and he wears his lenses constantly with perfect comfort.

Case Forty-Seven.—Has a history of asthenopia of several years' standing. Patient markedly hyperopic, lenses of five diopters being required for reading, pupillary distance by measure two and three-sixteenth inches, the ortho-phorometer giving her but one and seven-eighth inches, and when lenses were decentered and set to correspond they were worn with comfort.

In a case of myopia which has presented itself since this paper was begun, with lenses of D—1 and —1.25, respectively, and with ten degrees of exophoria, the measured pupillary distance was two and three-sixteenth inches, and with the ortho-phorometer two and nine-sixteenths, or three-eighths of an inch *greater* than the measurement.

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This case is of interest from the fact that the pupillary distance, as given by the instrument, is a partial relief at least to the heterophoria, for the correction of which cases I can hardly expect the instrument adapted.

In my office assistant with hyperopic astigmatism, with lenses of D. + 1.50 at 105° and 80° angles, respectively, her measured pupillary distance is two and three-eighths inches, but with the ortho-phorometer two and three-sixteenths only is required, which defect is equal to a prism of about three-fourths of a degree.

In my own case, with a pupillary measurement of two and five-eighths inches, the ortho-phorometer gives me but two and one-half, with D. + 2.75 lenses, which is equivalent to a 1° prism, or in other words I have been subjected to an excess of convergence equal to a prism of ½° before each eye, this being the cause of frequent attacks of conjunctivitis, which I had heretofore been unable to account for, but which has disappeared since correcting the pupillary distance of my lenses.

There are other cases of like interest, but which time will not permit of mention.

I append a list of 50 consecutive cases, with diagnosis, muscle deviation (if any), and the pupillary distances by measurement, and those of the instrument:

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Case.	Presbyopia.	Hyperopia.	Astigmatism.	Meas. P. D. In.	Instrument.	Difference.
1	"	"	" ½° ex.	2½	2½	⅛
2	"	"	"	2⅜	2⅜	⅛
3		"	"	2⅜	2 1/16	⅛
4		Myop.	"	2⅜	2⅜	⅛
5	" 1° es.			2⅜	2 3/16	1/16
6	" ½° ex.			2 3/16	2	1/16
7		Comp. hyper.	"	2⅜	2 5/16	1/16
8		" Myop.	" 2½° ex.	2⅜	2	⅜
9		"	"	2½	2 7/16	1/16
10		" Hyper.	"	2 5/16	2 7/16	D ⅛ greater.
11	" 3° es.			2 7/16	2 5/16	⅛
12		Hyper. 2½° es		2½	2	½
13		" Astigmatism.		2⅜	2⅜	⅛
14		"		2½	2½	D ⅛
15		"	" 1½° ex.	2 7/16	2 5/16	⅛
16		"	½° es.	2⅜	2	⅜
17	"			2 7/16	2⅜	1/16
18	"			2⅜	2⅜	⅛
19	"		1° es.	2 7/16	2½	1/16
20		"		2 5/16	2 3/16	1/16
21		"	" & ex.	2⅜	2 1/16	1/16
22		"		2 5/16	2 1/16	⅛
23	"		" 2° ex.	2⅜	2½	D ⅛
24		"	3° es.	2½	2 1/16	1/16
25		Comp. myop.	" ½° es.	2½	2 5/16	1/16 greater.
26	" 1° es.			2 1/16	2 5/16	2 5/16
27		Hyperopia.	" ½ es.	2 7/16	2⅜	1/16
28	" 3° es.			2⅜	2	⅜
29		"	" 1° ex.	2 1/16	2 3/16	2 1/16
30	Myopia.	"	"	2 3/16*	2⅜	1/16
31		"		2⅜	2½	⅛
32		"		2 5/16	2⅜*	1/16
33		Myop.	" 4½° ex.	2 3/16	2⅜	1/16
34		Hyper.	" 1 ex.	2 1/16	2⅜	1/16*
35		Myop.	"	2 1/16	2 5/16	2 1/16
36		Hyper.	"	2 1/16	2½	1/16
37	"			2⅜	2⅜	2⅜
38		"	"	2 5/16*	2 1/16	⅛*
39	"			2½	2 3/16	1/16
40		"	"	2½*	2⅜	⅛ greater.
41	"			2 5/16	2½	1/16
42		Comp. "	" 3½° es.	2½	2 5/16	1/16 greater.
43	"			2 5/16	2½	1/16
44		Hyper. & Myop.	" 1° es.	2 3/16	2⅜	1/16
45	" 1° es.			2½	2 1/16	1/16
46		Comp. hyper.	"	2½	2½	⅛
47		Hyperopia 2½° ea.		2 1/16	2½	1/16
48		Hyper.	" 1½° ex.	2 1/16	2 1/16	⅛
49	"	Myopia 1° es.		2½	2½	2½
50		Comp. hyper.	" 1° es.	2½	2½*	same.

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In recapitulation, I desire to emphasize the following points:

First, that the measurement of pupillary distances for reading lenses, with a rule, or pupillometer, is inaccurate, and wrong in principle.

Second, that from defects of the method, there has been caused a large number of cases of muscular asthenopia.

Third, that heterophorias have in many cases gone unrelieved by lenses, which might have resulted otherwise, had means been at hand for obtaining correct pupillary measurements.

Fourth, that the only method, whereby comfort can be obtained in wearing lenses, is by so adjusting them that their optical centers will be upon a direct line from the object observed to the eye.

Fifth, that the ortho-phorometer automatically, gives such pupillary distances accurately in all cases

DISCUSSION.

Dr. G. J. Palen: I have been greatly interested in Dr. Beebe's remarks, and in the description of his method for determining the inter-pupilliary distances of spectacle lenses.

The importance of properly adjusted lenses, is not to be disputed, and much has been written on this subject during the last few years, great stress being laid upon the determination of the refractive error and the condition of the muscles, the refractive error being corrected by suitable lenses, the muscular anomalies by combined prisms, or, by decentering the prescribed lenses.

If, however, we prescribe prisms with the correcting lenses and the inter-pupillary distances are incorrect, there results an additional prismatic effect, which will tend to either neutralize, or, to increase the strength of the prescribed prism.

That the present methods for determining centers, are not absolutely exact, is admitted by all.

Owing to the asymetrical position of the eyes, in their relation to the median line, any method which determines the distance between the pupils, and not the distance of each pupil from the medium line, would result in a false centering of the lenses.

Maddox, in his book on Ophthalmological Prisms, says: "It is often desirable to measure the distance of the center of each eye from the bridge of the nose, to estimate correctly any apparent want of symmetry, and to know at what distance from the middle line to place the geometrical or optical center of a lens. Many tests exist for the mutual distance between the two eyes, but they estimate the distance between the two pupils, whereas what we need for the exact study of prisms is the distance of the center of rotation of each eye from the median line with bisects the nose." Further: "When ordinary spectacles are prescribed for eyes placed unsymmetrically, the prismatic effect is greater for one than the other, which, however, is only of importance with very

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strong lenses, being counteracted by involuntary inclination of the head; another consequence is, that the fields of fixation for each eye are unsymmetrical. It is upon this principle that Maddox constructed his instrument, and the results obtained from its use are more accurate, than those obtained from other methods.

The bad results from present methods, are probably not due in all cases to faulty measurements, but, as Dr. Beebe says, because with none of these methods can we measure effect produced on the muscles by the correcting lenses when used at the reading distance.

The method as suggested, would seem to be more exact and to be based on better principles, than those which we are at present using, if accurately measuring lens holders and position of the vertical line can be assured. It would seem to me, however, that unless the lenses in the lens holders can be placed close together, the effect produced would be somewhat different, than that produced when those separate glasses are ground in one, this difference increasing in proportion to the strength of the lenses. The testing of the prescribed glasses would, however, determine any such difference.

There is no doubt that Dr. Beebe's method, if proven accurate, will be of great value, for with exact pupillary measurements, we can prescribe prisms, or decenter lenses and obtain better results than with present methods.

Dr. J. L. Moffat: I have frequently found trouble from even 1 mm. wrong adjustment of the optical centers. I know in one case my reputation was ruined with one family because the patient went to an optician, who misfitted the optical centers. Going to another oculist the patient received the same prescription and was sent to my optician—this time he went where he was sent and received proper glasses and credited the second oculist with the result. I am glad to have Dr. Beebe call attention to the importance of this; but I do not think that his instrument is a perfect one. I am strenuous to have the line of vision go not only through the centre of the glass, but as nearly as possible perpendicular to the plane of the glass. In his instrument, we are looking through the edge of the glass (not through its centre), and are looking obliquely, not perpendicularly.

In his instrument the dioptric centre of the lens or lenses is materially farther from the eye than will be the glasses he is going to wear, thus calling for an optical centre probably one or two millimeters less than the patient will need. (The doctor had one drawing there which will show that.) With a pair of eyes which are six centimeters apart hold the reading at thirty centimeters. The visual angles form a triangle whose base is sixty millimeters. It can readily be seen that the base will be decidedly shorter if it is one centimeter nearer the apex. The reading of the instrument is minus just to the extent its glasses are farther from the eye than are or will be the spectacles or eye glasses. In the other room I found by actual measurement one instance where this instrument had its dioptric centre one centimeter farther from the eye than the glasses the doctor was wearing. This will make a difference

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of one millimeter, or 1½ mm., in the pupillary distance. I noticed that Dr. Beebe wears his glasses far down on his nose (not an uncommon habit, although more rare than formerly). This affects the optical center. I prefer to put the glasses in a trial frame, tilted as to be worn, and have the patient fix his eye at the distance, and in the position of his book center each lens in turn. I thus get the pupillary distance more exactly and quicker than we can with this instrument or any other. I have discarded all pupillometers.

In order to use his distance test Dr. Beebe must have the two lines on his card at the same distance as the patient's pupils are. He must measure the pupillary distance before using this instrument in order to know which card of this series to use.

Dr. C. G. Fellows: I am very glad there is some objection to this instrument; otherwise we would all have to buy it and take it home. We could not do it, for this is the only one manufactured, and we would have gone home sad. The doctor has given us a way out of it. Apart from that, everything that is new, that is in the line of scientific discussion, is worthy of investigation. The doctor has reported fifty cases. Next year he will give us 450 more, and with better results. I am very glad to have seen the instrument and heard the doctor's paper.

Dr. D. W. Wells: This question of properly centering of glasses is of importance, but there is no practical way of properly centering glasses, except by bending the frames to fit the face. Supposing each eye is properly centered from the median line; noses are of such different shape on the two sides that any predetermined measure of pupillary distance is only approximate.

I measure the distance of each pupil from the bridge of the nose with an ordinary mm. rule, and order the frame, or trimmings, accordingly, and when the glasses come back from the optician I adjust them to the patient's face with a good deal of care. I believe this is the only practical method, for the P. D. varying with every change of convergence precludes mathemetical exactness.

Dr. E. W. Beebe: I will say in reply to Dr. Moffat's criticism, that it practically makes no difference whether we look through the middle, the lower, or upper edge of the lens to find its center; I chose the lower, as a matter of convenience, and because it is that portion of the lens through which we usually look when reading.

My first experiment was constructed so that the patient looked through the upper portion of the lens, but experiments have shown the superiority of the present method.

Regarding the tests for pupillary distances of lenses for use on distant objects, I have cards which go with the instrument representing all the different pupillary distances, from 2 inches up to 2⅝, one of which I select, which represents the measured pupillary distance of the patient when observing distant objects.

I stated in my paper that it was probable that my colleagues had been making the same mistake that I had with reference to pupillary measurements, the facts of which may be easily determined by requiring the

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patient to tip his head sufficiently forward, so that a vertical line on a card, held at the reading distance, may be seen above his lenses, then with the left eye closed and the head turned slowly from side to side, a point will be found where the line will be unbroken when seen above, and through the lens.

The right eye then being closed, and the left one opened, if the line is still unbroken the pupillary distance of the lenses are correct, but otherwise not.

According to my experiment three-fourths of the cases measured by the usual methods will be found to be incorrect.

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NOISE AS A FACTOR IN DISEASE.

BY D. A. MacLACHLAN, M. D.,

Detroit, Mich.

THAT noise can produce disease of the ear is well known, but it is not generally credited with causing disease of other parts or organs. That it is a factor in bringing on nervous affections, however, I think there can be little doubt. Moreover, I believe it is responsible for more disorders of the ear than it is generally credited with.

There are several ways by which it affects the ear. Detonations cause sudden shock to the nerve and loss of hearing, etc. Constant, long continued noises cause exhaustion or paresis of the nerve and gradual changes. Long continued, jarring sounds also produce aggravation of existing nervous disorders and probably sometimes set up disturbances of the nervous system independently of other causes.

Detonations: Concussion of the acoustic terminal apparatus by the action of loud noise, such as explosions of cannons, guns, pistols, etc., is due to the sudden condensation of air in the external meatus. The effect on the labyrinth of a box on the ear is most intense in those cases in which the drum remains intact, as the whole force of the concussion is transmitted by the foot-plate of the stapes to the labyrinth, while if the drum is ruptured by the blow, a large portion of the active force is expended in causing the rupture. The same holds good for injuries of the internal ear, due to detonations, which are not combined with rupture of the drum.

The anatomical changes of the labyrinth brought about by such violent action of sounds have so far, I believe, not been observed. It is possible, however, that the terminations of the auditory nerve undergo a sudden change in position because of the severe concussions of the labyrinthine fluid; the terminations of the nerve are consequently partly paralyzed or thrown into an abnormal state of irritation.

The symptoms of the labyrinthine concussions follow according to the intensity of the condensation of air or of the sound. Detonations close to the ear and in confined spaces, for example in covered shooting-stands, are particularly injurious. In slight degrees of labyrinthine

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concussions occurs a moderate degree of stupefaction, combined with a subjective singing noise which disappears again after some hours or days. In severe cases on the other hand great deafness immediately follows, accompanied by loud subjective noises, confusion in the head, and giddiness. The subjective noises go off after a few days as a rule, without any improvement in the function of the hearing. Pronounced hyperæsthesia acoustica sometimes associated almost always consists of the sensations of a shrill metallic additional sound in the presence of subjective noises.

Detonations produce hyperæmia of the outer and middle ear and hypersecretion of the cerumen, rupture of the drum, disturbances of hearing, and reflex disorders. The appearances of hyperæmia and rupture are well known. The disturbances of hearing are due to hyperirritation of the auditory nerve, corresponding to that of the optic nerve under sudden and excessive exposure to light. The reflex disorders are, involuntary inflection of the head, vertigo, headache, lancinating pain in the pharynx, nausea, and diarrhœa.

The perception of the sound through the bones of the head is rendered obscure or quite wanting according to the disturbance of the ear. The vibrations of the tuning fork from the vertex are always more strongly perceived by the unaffected ear. This test, in connection with the cause of the origin and the negative appearance of the drum membrane, determines the diagnosis of concussions of the labyrinth.

A very few cases of severe concussions of the labyrinth terminate in recovery, but this results only gradually after weeks or months. In most cases a considerable disturbance of the hearing, but seldom total deafness remains. However, total deafness may develop progressively out of an originally very moderate disturbance of the hearing.

Continuous Noises: Detonations are, however, not the only sounds that produce disturbances of hearing. Sounds much less intense, but acting constantly for a long time, appear to bring about changes in the ear that are almost, if not quite, identical with those produced by detonation. Certain occupations (locksmiths, coopers, tinsmiths, boilermakers, etc.), in which continuous noises act upon the ear, cause an irritation and paralysis of the auditory nerve in consequence of the loud constant action of the sound. Gottstein and Kayser very rarely found normal hearing among blacksmiths and other smiths. In twenty-eight per cent. there was found a considerable diminution or total absence of perception through the bones of the head. Impaired hearing, the so-called signal-deafness, is frequently found among engine drivers as-

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sociated with subjective noises, etc. This has been attributed to the continual severe shaking to which they are exposed, as well as the persistent strain of the ear, in order to hear signals. Some have thought this might also be due to the shrieking of the whistles and other loud noises to which railway servants are subjected, together perhaps with various abnormal conditions of the middle ear and pharynx, which would render their ears more liable to injury. Politzer believes that affections of the ear, associated with subjective sensations and an irritative state of the auditory nerve, are certainly injured by noises in certian occupations continually acting upon the organ of hearing. He had observed in locksmiths, blacksmiths, millers, coopers, and other workers in noisy factories, that in consequence of the excessive irritation of the auditory nerve the subjective noises and deafness continued and increased in spite of treatment. In such cases "the detrimental action of loud noises upon the diseased auditory nerve is as apparent as that of glaring light upon the diseased retina." That those occupations which are associated with continuous noises, not only act unfavorably upon the affections of the ear already existing, but actually cause ear diseases, is beyond doubt. Politzer found that next to locksmiths, coppersmiths and coopers were most afflicted by disturbance of the hearing. Upon the coopers especially, according to their own statement, the so-called hollow stroke, when hooping the casks, is said to have such a deafening effect that almost all of them, if they remain at their trade, become hard of hearing after a time.

Pathology: Haberman examined thirty-one boilermakers, in whom there were no pathological changes in the middle ear. In all he found impaired hearing. The loud noise was heard comparatively better than the whisper. Bone-conduction for the C. turning-fork (128 vibrations) and also aerial conduction were diminished respectively in every one. Rinne's experiment had a pronounced positive result in all, and the hearing for the highest notes was extremely diminished. Subjective noises existed in fifty per cent., and naso-pharyngeal catarrh in only six cases.

He also examined histologically the hearing organs taken from a man of seventy-five years, who had been subjected to incessant loud noises for twenty years in a copper works. Microscopically the parts appeared to be normal, but microscopic examination revealed atrophy of the nerve trunks in the entire inner ear. In the basal cochlear turn there were found in the canalis ganglionaris only a few ganglion cells, and

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the canal was filled as well with mucoid connective tissue; in place of Corti's organ there was an indistinct mass of cells. Towards the cupola of the cochlea the parts were normal.

The condition of both windows are worthy of note. The basal plate of the stapes in its anterior half was drawn extremely outward, while its posterior portion was moved inward to a large extent, just as it would be under an extreme pull of the stapedius muscle. The membrane of the round window was bulged toward the tympanic cavity. Both ears presented about the same appearances.

Haberman thinks that "through the permanent excessive excitement of the nervous end-apparatus of the inner ear, a diminution of its excitability, in the basal turn, respectively, a paralysis occurred, which led to further degeneration of Corti's organ, placed out of function, and further to an ascending atrophy of the respective nerves." Also, that the continuous action of the loud, high-pitched sound had thrown the stapedius muscle into permanent contraction and thus brought about the peculiar outward dislocation of both basal stapedial plates.

Among the causes of deafness hereditary predisposition plays an important part. It is well known that deafness is hereditary in many families, so that part or all of them are ultimately afflicted with it. It may not always apply to the immediate descendants; indeed it is likely more often to occur in the second generation. "One swallow does not make a summer," so one, two or three cases occurring in a family, does not positively indicate hereditary predisposition as the cause; but when several members of the same family, whose ancestors have been afflicted by ear affections, have developed diseases of the ear and deafness without other demonstrable cause, it seems fair to attribute it to hereditary tendencies. This inherited tendency to deafness no doubt accounts for many cases of bad results following injuries, and predisposes to injury from noises of any sort; even slight detonations may cause serious injury to the ears of such persons, while a healthy ear under the same circumstances would escape injury. Constant noises would also affect the ears of such persons more certainly, more quickly, and more profoundly than they would the ears of persons not so predisposed.

Hyperæsthesia acoustica is a painful sensation in the head produced by tones or voices. It is a familiar fact that the very highest tones cause painful sensations, even with persons with sound ears. The degree of sensibility for these highest tones varies in different individuals, and even in the same individual under different bodily conditions.

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Weakly, easily excited, nervous, and anæmic persons, are often unpleasantly affected by high or jarring tones or noises, which would not disturb strong and healthy persons at all. It is a familiar experience with most of us that in the evening, say, when the nervous system is particularly relaxed by mental work, or in the morning after a sleepless night, that these high or discordant notes will affect us unpleasantly, while at ordinary times they do not disturb us in the least. Bodily disposition therefore frequently increases the sensibility of persons who at ordinary times are only moderately sensitive to notes or tones.

Acute inflammations of the menbrana tympani are seldom accompanied by hyperæsthesia. When it does occur the disease of the membrane is combined with swelling and hyperæsthesia in the tympanum, and consecutively with hyperæsthesia in the labyrinth. It is in rupture of the drum membrane by a blow upon the ear that hyperæsthesia is most often noted in connection with acute conditions. In these cases rupture of the membrane is not the cause of the hyperæsthesia, but it is due to the concussion of the expansion of the auditory nerve in the labyrinth, which is irritated by the blow upon the ear.

It is in chronic affections of the middle ear, however, that we most frequently observe hyperæsthesia. In these the cause is to be looked for in the secondary changes that are produced in the labyrinth by the gradually progressing disease process. These insidious changes in the middle ear, which end in anchylosis of the stapes, are frequently accompanied by thickening or atrophy of the membranous labyrinth, by deposition of calcareous salts, by discharge of the amorphous pigment, and by hyperæsthesia of the auditory nerve.

It is an interesting and important fact that the painful sensations caused by tones or noises are not always confined to the ear, but not infrequently causes various reflex phenomena. Such patients, for example, often complain of uneasiness and trembling at the same time with the unpleasant sensations in the ear; they avoid noisy streets, noisy meetings, and the clanging of instruments at noisy operas and concerts. Often they complain of numbness in the head, headache, and nervous excitement, if obliged to remain some time subject to the noises.

Hyperæsthesia acoustica has no connection with the subjective noises in the ears. The two may exist together, but frequently no sign of hyperæsthesia is present with loud subjective noises, or in most cases of marked hyperæsthesia, there are no subjective noises whatever; but hyperæsthesia may occur even in cases of complete deafness. Pos-

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sibly the auditory nerve consists mostly of fibres, which, when irritated by waves of sound, bring about in us the perception of sound; and that in addition it possesses another kind of fibres which are merely irritated by sound, giving rise to a peculiar sensation of pain without at that time any perception of sound.

In this, attention may be called to another interesting fact, viz., that pain in the ears occurs mostly as a symptom of acute rather than chronic inflammation in the external or middle ear. Thus while pain is a frequent symptom of acute ear affections it is rarely present in the chronic conditions in which tinnitus or hyperæsthesia is so frequent an accompaniment.

I think there can be no doubt of the truth of what was said in beginning, viz., that noises may aggravate existing nervous disorders, or even be the primary cause of disturbances of the nervous system. In this, the marvellous dawn of the twentieth century, one of the chief elements of our advanced civilization is noise.

Outside of our places of residence or business, the shriek of locomotives and the rumbling of trains, the clanging of street car bells, are added to the rattling of vehicles and the patter of horses' hoofs upon the pavements, the shrill cries of the newsboys, the hoarse calls of the street vendor, the ding-ding of the scissors grinder, and the mellifluous tones of the rag gatherer's and the old-clo'-man's tin horn. Inside, are the noise of the machine shop, factory, or smithing, the elevators, the calls for "cash boys," the snap of the cash register or railway, the din of conversation, and the shuffle of feet in the shops and stores; the click of the telegraph instrument, or the clack-clack of the typewriter in the offices; and later the squalling of the baby, the wrangling of the boys, and the piano practice of the girls in the home.

All these, together with the cares, the worry, the scheming, and disappointments of life, combine to make us the pale, thin, rushing, and nervous people we are known to be, and to fill our jails, our asylums, our hospitals, and our cemeteries. It is true the human nervous system adapts itself to its environment to a great or less extent and thus patiently endures what would otherwise distract, but it suffers nevertheless. When the limit of endurance is reached, as it must sooner or later be, the break occurs. Then a trip abroad, a month in Cuba or California, a fishing or hunting excursion to finish the needed respite from business and noise, is advised. If that does not relieve the hospital or asylum is the next resort. The main object in the treatment, however, is to get away from the distracting noises of the city.

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The "ounce of prevention" is the chief thing to be thought of in disorders due to noise. It makes no great difference whether it be detonations, or continuous noises, prevention must be studied. The devices resorted to, to avoid injury from detonations, such as keeping the ears well inflated, breathing with mouth open, wearing cotton-wool in the ears, etc., are familiar to you all. These precautions are pretty sure to protect too—it is usually when persons are caught off their guard by an unexpected explosion or other sudden intense sound, that injury results to the ears.

These measures avail very little, however, in the case of continuous noises; change of occupation and quiet is necessary in such cases. Either this or lessening of the sounds is essential. There is no doubt that the latter can be secured in very many cases. The question is how? In noisy factories, deadening the floors and walls will help materially. There should be laws against the ringing of church bells and of street car bells in the centre or crowded districts of our cities. A dozen clanging bells not only make a horrible din, but an absolute confusion of sounds, so that it is useless as a warning to anyone. A gong might be struck in case of real danger, and cars should move slowly enough in the crowded parts to permit almost instant stoppage by air brakes. As it is, each motorman makes all the noise he possibly can to drown that of the other fellow, hence no one gong is distinguished, but a confusing and distracting din is produced.

The cries of newsboys, street-vendors, and of all persons on the streets should be prohibited. Asphalt, or equally noiseless pavements, should be laid on down-town streets where traffic is heaviest; or persons should be compelled to use rubber tires on vehicles and noiseless shoes on horses. When the time comes that only automobiles will be used, rubber tires will solve the problem.

High buildings overcome the difficulty from street noises, in part, as anyone knows who has done business in the upper story of a modern sky-scraper. Above the sixth or eighth story is like the country or forest as far as noise is concerned. One might almost as well work in a boiler factory, as in a room with open window on a down-town corner in a large city. High buildings in the central and congested parts of a city are exceedingly desirable from the standpoint of noise, as well as for other reasons, and with all possible lessening of street noises, would go far toward relieving the shattered nerves and health of the army of sufferers from constant, jarring sounds. A general crusade should be inaugurated and maintained until reform of these evils shall have been established.

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DISCUSSION.

Dr. J. N. Anderson: Dr. MacLachlan's paper brought to my mind a case that came to me quite a number of years ago, sometime after the "late unpleasantness" with the South, showing the ability of a man to sleep under adverse circumstances. He was connected with the artillery in active service, and was in action until he was so overcome from want of sleep that he lay down under the cannon, while someone else did the execution. He fell asleep there, with the cannon going off every minute, and slept soundly, and when he awoke his hearing was gone. I saw him fifteen years after and he was almost totally deaf. There were no objective symptoms of any trouble in the ear.

Speaking about reflex cases, if you will pardon me for referring to a case which came to me just a day or two before I left home. A young man in good health, about twenty-two years of age, came to me for treatment of disease of the nose, and mentioned, incidentally, the peculiar symptom from which he suffered, viz.—a severe attack of singultus every day from 5 to 8 o'clock, brought on by washing his face or touching his face with his hands. The only relief that he has been able to get at all has been by lying on his face, and keeping perfectly quiet. Then it gradually goes away, until the next day.

Dr. N. Smilie: Speaking of the results of the discharge of heavy guns and ordnance, perhaps it would be of interest to relate a peculiar accident that occurred to a friend of mine, Captain Murphy, of the "Brooklyn," who was in the action at Santiago, in the Hispano-American War. He was in command of the ship and, in an unguarded moment, exposed himself to the shock from the discharge of a 13-inch gun. The result was a perforation of the drumhead in the form of an opening similar to that which could be made with a leather punch,—a round hole, with almost complete excision of the drum, as cleanly done as with sharp knife. Of course, he lost his hearing at the time, and as he was ordered away before the treatment was completed, it is not known exactly what the final result was, but probably great impairment of hearing in that ear.

Dr. H. S. Willard: Dr. MacLachlan in his paper has so thoroughly covered the subject there is little I can say, except to perhaps emphasize a few points of the many he brought up. Those of us who are doing, or have done general work, fully appreciate the advantages of absolute quiet in treating nearly all classes of diseases, and especially those in which the mind and nervous system requires rest; and on the other hand, how much harm may be done by a sudden or continued shock to the auditory apparatus. May it not be a fact, in the city more especially, that many of our insomnia and neurasthenic cases commonly ascribed to derangement of the digestive organs or to over-work are greatly aggravated, and in fact sometimes caused by the action of noises upon an hyperæsthetic ear?

In cases of impaired hearing, due to detonations, next to the deafness, the subjective noises seem to be the chief cause of complaint, and

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though most authorities claim that this is a transient symptom, in the few cases I have seen there has been little or no diminution in the intensity of the sounds even after years have elapsed.

On case in particular furnishes a good example:—that of a man rendered deaf in one ear during one of the battles in the War of the Rebellion, and to the day he died—over thirty years after the accident—he was never free from a continuous roar upon the poor side.

In this case the membrana tympani had been ruptured, but had healed well and showed little evidence of any sclerotic changes.

As to the effects of continued noise upon the ear there is no doubt that it is a frequent factor in the cause of deafness, especially in mechanics, who are exposed not only to constant stimulation of the auditory nerve, but to excessive heat, vibration, etc., which render the acoustic nerves much more sensitive to the reception of sound waves, and tend to reduce the healthy tone and resisting powers of the ear. Dizziness is a frequent accompaniment of both detonation and continued loud noises, though I believe it to be much more marked where there pre-exists a chronic catarrh with its invariable sclerotic changes, since the shock to the labyrinth and so to the semi-circular canals is more intense where membrana is tense and less mobile than if it were in a normal vibratory condition.

Little has been written, or indeed is known, as to the exact pathology of these internal ear affections, due to concussion or continued excitation, though it seems fair to suppose that the jar of concussion or the combined heat and noise of the more insidious cases produce first a congestion followed by exudation and organization of tissue, producing atrophy by either instant or gradually increasing pressure in a space which nature made too small for the reception of any foreign material.

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EMBOLISM OF ARTERIA CENTRALIS RETINÆ.

BY J. M. PATTERSON, M. D.,

Kansas City, Mo.

I DESIRE to report a case of above trouble, with the intention of placing it on record, and to briefly consider one of its causes and our present method of treatment.

Mrs. N., age forty. Had inflammatory rheumatism (acute articular rheumatism) for one year when about sixteen years old. Finally seemed to have made a perfect recovery, and from that time has had few rheumatic symptoms.

Married at eighteen years. Mother of two children. Father died of typhoid fever. Mother still lives, aged sixty. Husband died eighteen years ago of consumption of bowels. She has been a book-keeper for years and confined closely to the office.

For several years past has been troubled with indigestion and constipation. Menses normal. Lips blue, showing marked evidences of impeded circulation. Had heart examined by an expert who reported no organic murmurs, but marked hypertrophy, apex beat is lowered from 5th to 6th intercostal space.

Kidneys. Sp. Gr. of urine 1.015 React. acid. Odor normal. Color dark. Consistency limpid. H N O_3 and boiling negative for albumen, but with Hg C12, K2 Fe Cy6 a trace of albumen is found. No sugar.

Microscope:—Pus, urethral and bladder epithelium. Few oxalate of lime crystals. No renal cells or casts.

January 16, 1900, while at work on books, had sudden loss of vision in right eye. Came immediately to my office. No perception of light whatever in that eye. Subjective sensation of a horizontal streak of light before that eye. Vision in other eye 20—xx.

Could notice no important change in fundus. In fact by ophthalmoscope could not tell at that time which was the affected eye. Tension normal, pupil reflex absent in that eye, with the other eye bandaged, but pupil responded to light thrown into other eye.

Gave inhalation of *Nitrite of Amyl.* and as bowels had not moved for several days ordered a cathartic.

She returned to my office same day about five hours after first visit. The papilla seemed more pale, and I found the peculiar red or cherry spot at macula. There was marked pallor of whole retina and the arteries were then decidedly contracted, the veins were never noticeably changed.

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I gave her eye a thorough massage, which I repeated at each daily visit and used *Nitrite* of *Amyl.* inhalations. In examining eye from day to day I could detect no further change by ophthalmoscope.

On the eighth day I gave her five-drop doses of tincture of *Digitalis*, with $^{1}/_{100}$ gr. *Nitro-glycerine* every three hours, thereby giving much more force to heart systole. On the afternoon of the eleventh day, while going home in order to avoid getting wet by a shower, she ran rather rapidly for about 100 feet, when suddenly vision returned to the eye. She reported to me the next day, when I found central vision $^{20}/_{20}$, with considerable photophobia.

On taking field of vision I found it normal, except a small sector on inner lower quadrant, and this only a relative scotoma. On second day after, the field of vision seemed perfectly normal in every direction. Now, May 3d, after nearly four months, the vision and field are both normal, showing no permanent damage to retina after eleven days' absence of blood from central artery.

The whole history points to a typical case of embolus and possibly the happy result was due as much or more to the sudden exercise, causing the already considerably stimulated heart to pulsate with much more force, thereby causing dislodgment of the fibrinous shred plugging the central artery. From my knowledge of the circulation in the retina, I believe the embolus had not entered the central artery, but only obstructed its orifice where it is given off from the ophthalmic artery, and that the partial scotoma was not caused by the plug being crowded further into one of the superior branches of the central artery, but was the result of this part of the retina having in some way suffered most from want of nutrition and that its function was not re-established quite as readily as other parts of the retina. Stoppage of the circulation of central artery causes immediate blindness because the nervous elements of the retina depend upon this artery for its blood supply and the epithelial layer receives its nourishment from the chorio-capillaris, still it is possible that the nervous layer received sufficient nourishment through the chorio-capillaris to prevent atrophy, although it could not receive enough to maintain its function. This case shows that although the obstruction lasted eleven days the function was regained, while most authorities say that such is never the case even though the obstruction remained a brief time.

Thrombosis is the one affection causing sudden blindness in one eye that is most apt to be confounded with embolus.

Hæmorrhages into the retina are much more frequent in thrombosis.

Priestley Smith claims that "medical aid is more serviceable in thrombosis than it is in embolism, and that he has been able under certain cir-

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cumstances to avert blindness by increasing the heart's action, especially if it has declared its presence by transient obscuration of vision." This obscuration of vision, which was never present in my case, he considers an important diagnostic sign.

According to Kern a majority of cases that present the picture of embolism of central artery are not due to an embolus, but probably dependent upon a local disease of the central artery, atheroma, syphilis, endarteritis from chronic kidney disease, or other dyscrasia.

There seems to be an almost universal opinion among writers at present that stimulation of the heart, with frequent and thorough massage of the eyeball, is the best way to proceed in these cases presenting symptoms of embolus.

Wood-White was first to employ massage with good results in a case of typical embolus with blindness, resulting in recovery of normal vision.

Sclerotomy, which was so much used a few years ago, has few advocates now. Prof. Haab, in a very thorough article upon these subjects in the 4th volume of Norris & Oliver's System of Diseases of the Eye, makes the assertion, but to my mind gives no proof, that in these cases of recovery after massage the case was one of thrombus and not embolus.

DISCUSSION.

Dr. A. G. Warner: The authorities leave us very little comfort in cases of this sort. Professor Haab insists very strongly that these cases are a nature of embolism. He claims to prove that the existence of an embolism is wanting in the case described. Then comes Dr. Casey A. Wood, who, in his article in the "Ophthalmic Record," last June, tells us not to place too much dependence on the treatment in these cases, as not a few cases of partial and even of total embolism get well without treatment. He thinks the value of massage is very doubtful. Nevertheless, I congratulate the doctor on the result of his treatment in this case. My experience is that they do not recover under any treatment, and until we have more knowledge I think the doctor is justified in terming his case one of embolism, and I am very glad he has placed it on record. Again, I congratulate him on his result.

Dr. T. M. Stewart: There is one point in the management of this case that calls to mind something that was spoken of a little while ago, and that is "results obtained by going contrary to established rules." It would seem in such a case as this that quiet and rest would be indicated, and the clinical point brought out by a violent exercise of this patient shows the toleration of the eye. The case is an interesting one and its record is of value.

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Dr. J. L. Moffat: All my experience in this trouble has been fatal to the sight of that eye; when I have had my patients kept as quiet as possible. If we could only be sure that it was an embolism of the mouth of that artery, we would be justified in trying to drive it on into the ophthalmic artery. If the embolism is in the arteria centralis, of course we are only plugging it more thoroughly; but this cannot make matters any worse. I think we might as well try that until someone can tell us they have cured a case by rest.

Dr. J. M. Patterson: I presented the case to the Society because I knew it would go on record. I did not expect such a result from the treatment, and do not know whether to attribute the recovery to anything I did, but as there are very few of these cases reported cured under any method of procedure, and none, to my knowledge, under the "quiet treatment," I would certainly suggest a trial of what may be called the "active treatment."

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TREATMENT OF DEFLECTION OF THE NASAL SEPTUM.

BY H. H. LEAVITT, M. D.,

Minneapolis, Minn.

THERE is no longer a question as to the expediency of operating on a deflected septum in suitable cases, and where other and simpler means fail to give relief. The question is what operation should be chosen. Many methods have been advocated and each has its disadvantages and short-comings. Dieffenbach proposed excising the projecting cartilage with a knife. Huyler recommended scissors for this purpose, after dissecting up the mucous membrane. Blandin advocated making a permanent perforation through the septum, thus adding one deformity to another. Use has been made of the galvano-cautery or electrolysis applied to the convex portion with the expectation that the resulting cicatrix would pull the septum into place. Laminaria tents have been used to press the septum into position and forcible replacement of the septum, with subsequent wearing of ivory plugs or gauze packing to hold the septum in the new position. These methods have all proved satisfactory. The results at best were uncertain, and the suffering on the part of the patient was considerable.

The mechanical principles involved in straightening a deflected septum were appreciated more fully by Doctor Asch, of New York, than by any of his predecessors, and it is due to his genius that the so-called Asch operation was elaborated. The operation is relatively simple and the results are quite satisfactory to patient and physician.

The method that I have followed in my cases has been this: Before anæsthetizing the patient I have sprayed the nostrils with an alkaline, antiseptic solution. After anæsthesia is complete the head is drawn over the end of the table or the shoulders elevated so the blood will not flow into the larynx. A steel elevator is now passed into the occluded nostril and any adhesions between the septum and turbinates broken up. In traumatic cases the adhesions are often bony and a gouge may be required to break them. An Asch cartilage scissors is now inserted, the flat blade into the occluded nostril—the cutting blade into the other. A horizontal incision is made through the greatest convexity; the scissors are withdrawn and reintroduced, making an incision at right angles

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to the first one. The finger is now introduced over the convexity, and the septum pushed over beyond the median line and until its resiliency is destroyed. A pair of forceps with flat blades is now introduced, the septum is grasped and the cartilage comminuted at the base, then the septum is straightened. A hollow splint is inserted into the formerly occluded nostril and a smaller one on the other side. Hæmorrhage is apt to be quite profuse. A spray of ice cold antiseptic solution and the insertion of the hollow splints soon control it. The smaller splint is taken out and not replaced, in two or three days, the larger one is worn for about five weeks, though it is removed every other day or so for cleansing. The patient soon does this himself and reports at the office only twice a week. At the end of the fifth week healing will usually be complete, the splints can be safely removed and the septum will remain in the median line.

The operation doubtless seems radical, but the results fully justify it, and the desired result I believe can be attained in no other way, with so much certainty of success. I have performed this operation substantially as described a number of times, and the results have been very satisfactory.

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THE VALUE OF THE REMOVAL OF ADENOIDS FROM THE NASO-PHARYNX.

BY J. B. GARRISON, M. D.,

New York.

I have endeavored to write upon the subject which this title calls for, because it seems to me to be worthy of serious consideration in all its aspects, and hope that a full discussion before this society may serve to bring out some new points, as well as to impress the necessity of recognizing the presence of adenoids in the naso-pharynx, and of removing then by some means, medically or surgically, so that speedy relief of existing symptoms may be had, and, what is even more of a duty at our hands, to prevent the more serious consequences which often follow when they are allowed to remain as an obstructing foreign body.

That the removal of the hypertrophied glands from the naso-pharynx is curative of many uncomfortable conditions, readily and permanently, is evident to us all; but we should not fail to recognize the fact that there are serious conditions that are more or less certain to follow a failure to remove these obstructions from the naso-pharyngeal space, and it is to this point that I would especially invite your attention. We may look upon the operation for the removal of adenoids, then, as being both corrective and preventive.

The operation may be said to be corrective of: Mouth-breathing in all of its forms; purulent rhinitis; frequent attacks of bronchitis or laryngitis; otitis in different grades; deafness; lack of mental development; irritability of temper; nocturnal enuresis; some cases of epilepsy; and indigestion produced by the swallowing of secretion from the post-nasal region.

All of the conditions that I have here enumerated are frequently cured by the proper removal of the irritation from the naso-pharynx. While epilepsy is not one of the frequent conditions that respond to this treatment, it is sometimes cured, or at least very much improved by it. I have only had one case of epilepsy where I have been able to observe the effect of the removal of adenoids, and in it the result was very pleasing. The boy, a lad of sixteen years, had been having seizures many times a day, and after the operation he did not have a seizure

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for a week. Going into a crowd to see a parade at the end of a week he was taken in the street car going home, and had another the following day; but was very free of seizures for several months, it now being more than a year since I have heard from him.

As the case just narrated was undoubtedly caused by nerve influence acting reflexly, in the absence of any other we should expect good results from the removal of the adenoids from the vault of the pharynx, and should always remove them when found to be present.

As a preventive, we may clear out the naso-pharynx with reasonable hope of preventing the development of: Laryngeal and pulmonary tuberculosis; hypertrophy of the turbinated bodies; deafness; suppuration of the ears; chorea; and the chronic catarrhs, that plague both the patient and the physician, might, in the opinion of the writer, be less often found if the adenoid condition was recognized and treated before the symptoms became marked. In advising treatment I do not wish to be understood to advocate surgical treatment to the exclusion of medical, but on the contrary I believe that we should give the homœopathic remedy, as we are able to discover it, ample time to effect a change, and we should frequently find that its use will render surgical interference unnecessary. The irritation should be removed by the best means at our command. The very young are not always the only ones that will respond promptly to the use of a well-selected remedy. There is great satisfaction, both for the patient, or patients, and for the physician, to find that after treatment the suppurating ear becomes dry; the labored breathing during sleep changes to a perfectly easy and quiet slumber, giving the anxious mother an opportunity to be likewise refreshed by a rest heretofore unobtainable; the child who, formerly called stupid because its school duties were improperly fulfilled, becomes as bright as its fellows, and who has, from ill-nature, been considered almost a nuisance, blooms into a delightful companion, the pride of its parents and the longed-for associate of its play-fellows. These pictures are not overdrawn, as can be testified to by many of us.

A few illustrative cases will serve to make a proper ending to this paper, and I have purposely taken from my records cases of different ages and also those treated surgically and medically. All of them, excepting one (Case six), had received remedies for a period, either from myself or some other physician, and in none of these cases was there any intra-nasal pressure from deviated septum or turbinal hypertrophy.

Case One.—Miss M., aet. twenty-five. Comes with the complaint of snoring during sleep, the accusation of which is very annoying and em-

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barrassing. Breathes with open mouth unless her attention is called to it; and must keep mouth open when any unusual exercise is taken. No obstruction found in the nasal cavities. Adenoids found, especially at the site of the third tonsil. A general anæsthetic being declined, I made an application of cocaine and removed the hypertrophies in my office, completing it at the second sitting.

This was done just prior to her going to their country place in New Hampshire, so that I did not see her until fall, when she reported being able to ride her bicycle or attempt any vigorous exercise without being compelled to open her mouth. She has also been able to sleep without disturbing her friends with a snore. She had been under other medical treatment, but not having found relief, desired an operation at once.

Case Two.—Bettie A., aet. four years. Had an otitis media supp. following an attack of measles a few months previously. Was becoming deaf. The mother noticed that she was breathing through her mouth while sleeping at times, although it was not marked. Digital examination reveals a mass of adenoids on each side, with some centrally implanted. It was thought best to use medical treatment, which was instituted and kept up for a month, when, no improvement being seen, and the mother anxious to have her cured, she was anæsthetized and the naso-pharyngeal space cleared at once. Her hearing became perfect within a fortnight and a recent inquiry elicits the information that there has been no further trouble and that she no longer takes cold as she used to.

Case Three.—Elizabeth C., aet. fifteen months. Continually breathes through the mouth. Nurses with the greatest difficulty, as she must release the nipple every time she gets a breath. Worrying all the time. Thick discharge from the nose, making the upper lip sore when it touches it. Prescribed for it several times, but the mother, who is a domestic working in a family, probably does not pay sufficient attention to the directions given and no results are noted. Under the circumstances it was decided that a radical operation was necessary in order to permit the baby to obtain sufficient nourishment, and an operation was done under chloroform, clearing out a large amount of adenoid tissue. The result was a great surprise to the mother, as the child was able to nurse comfortably as soon as she came out from the influence of the anæsthetic.

Saw her in a week, and there was no more whining, but a bright, well-nourished child.

Case Four.—Master D., aet. ten years. Has a troublesome hoarse cough, croupy in character, but not aggravated at any particular time.

Constant sniffing at the nose. Nose always more obstructed toward evening. These conditions have been present for several months and treatment has not been of benefit. Nasal and pharyngeal vessels engorged. Medicine was chosen after demonstrating the presence of

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adenoids with the finger, and in one week improvement was noted and in three weeks all the symptoms had disappeared and did not return.

Case Five.—H. G., aet. three years. Thick, corrosive discharge from the nose, completely filling the nasal passages and making it impossible to breathe thro' them at all. Would drop asleep from exhaustion and suddenly start and sit upright in a state of terror. Cried every time she wanted to urinate. All symptoms worse about 4 o'clock in the afternoon. Adenoids detected. Remedy was chosen and given, and in one week all of the most severe symptoms were absent. Continued the remedy, which in this instance was *Lycopodium* 30, for two or three weeks, when everything was normal. No return of mouth breathing or other difficulty for four years.

Case Six.—Phyllis M., aet. twenty-one. Chorus singer. In this case there was hypertrophy of the whole chain of adenoid tissue. The faucial tonsils were so much enlarged that they coapted at the median line. The lingual tonsils were much enlarged. Digital examination showed the presence of a greatly hypertrophied pharyngeal tonsil and with adenoids around the openings of the Eustachian tubes. Her condition had compelled her to lose part of an engagement, and now she had an opportunity to secure another if she could appear before a manager in three days. She was advised to enter the hospital at once and to have a complete operation made. This was declined, as she was afraid the removal of the faucial tonsils might cause soreness, lasting so long that she would not be able to take her engagement. I finally succeeded in obtaining permission to do something in the way of relief at the office, and after applying cocaine, removed some of the lingual tonsil and the pharyngeal tonsil, which was a very large mass of adenoid hypertrophy.

She appeared at my office the following day, showing, greatly to my surprise, faucial tonsils reduced fully one-half in size, and the ability for voice using greatly increased. She promised to come, when the season was over, to have a thorough operation done, but I have never seen her since. I learned that she kept her appointment with the manager and secured the engagement, and left town with the company.

The cases I have selected for illustration serve to show the wide range of age in patients needing the operation, or treatment, for the removal of the irritating masses. It also shows that, in some cases at least, the remedy will act promptly and efficaciously. I may say that it may be our fault in not properly selecting the remedy that many more do not respond to the remedies given, and we should always endeavor to cure in this manner, even if we are forced to abandon it for the surgical method in the end.

Let every practitioner of medicine, whether general or in the practice of any specialty, learn to detect the presence of adenoids, and to impress upon the parents the necessity of proper treatment for their re-

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moval, and the coming generations will not fail to be grateful for the decrease in the chronic catarrhal conditions of the nose and throat in the land.

DISCUSSION.

Dr. Wm. Woodburn: I heartily commend the emphasis Doctor Garrison gives to the subject of his paper. I have for a number of years been convinced the importance and far-reaching ill effects of unrecognized or improperly treated adenoids was properly appreciated by a too limited number.

In some points the doctor's experience is at variance with my own. I must confess I have absolutely no confidence in the power of any remedy to permanently remove a well-developed case of this nature. I have tried faithfully, and have seen others try, even professors of materia medica, with the same result—failure.

Then, again, granting that success would be attained in a limited number of cases, why delay the relief of the patient for weeks when relief can be given immediately, safely, positively and permanently. No class of cases yield more satisfactory results to both patient and physician. I have noted the same observation the doctor cites concerning the favorable influence on the pharyngeal tonsils by the removal of adenoid growths. It is my custom, in cases where the degree of hypertrophy of the pharyngeal tonsils is only moderate and where I can have the patient under observation for some weeks, not to excise them at the time of removing the adenoid tissue in the post-nasal space. But as often occurs I will not be able to watch the case, to make sure if the result I excise them along with the latter.

I have not observed anything but the results of former adenoid growths in any patient beyond the age of twenty-two.

In case four, which Dr. Garrison cites, I am inclined to think the symptoms present were due much more, if not entirely, to the general engorgement than to the presence of adenoids mentioned. The doctor does not state that the adenoids disappeared under treatment, only the *symptoms* disappeared.

Dr. E. L. Mann: I would like to ask Dr. Garrison whether in the case reported in which the symptoms were relieved by the internal remedy the adenoid growth itself disappeared. Personally I have not the confidence in the internal remedy that some members of the society enjoy. I have tried them faithfully, but, as far as the removal of the growth is concerned, I have been disappointed. With the influence of these growths on the middle ear, the quicker we get rid of them the better, and, provided a long course of medicinal treatment *will* relieve, we are not, I think, justified in waiting. Medical journals have lately published several cases of death from chloroform, occurring just prior to adenoid operation, with the statement that this class of cases is especially susceptible to the influence of this anæsthetic. Knowing that many operators give chloroform, and operate with the child in the upright position, it occurred to me that the position of the patient might be

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responsible rather than any peculiar susceptibility. I would like to hear this matter discussed.

Another point is the relation of adenoid growths to high arch of the palate. In the very young, as the lower jaw drops and the mouth opens for breathing, the tongue is withdrawn from the palatal arch, and consequent narrowing results. Where this is excessive, it is an element in prognosis and also an argument for early operation.

Dr. G. W. McDowell: In suppurative disease of the middle ear the presence of adenoids as a causative agent ought to be considered every time. Nowadays we operate for relief of chronic suppurative middle ear disease by making a radical operation. I think in all cases of long standing chronic suppuration, previous to making any operation, even ossiculotomy, the vault of the pharynx should be examined and the adenoids removed if present. I have found chronic cases of suppuration respond very quickly to the removal of adenoid growths. In the case of a child it stopped in two weeks, where he had been under treatment a year without any appreciable results. Again, in connection with operation, I want to draw the attention of the society to the fact that recently fatal cases have been reported following the removal of adenoids, the cause of death being septic meningitis,—a large raw surface being exposed to septic influence. Most operators take no pains to disinfect the cavity to be operated on. Here, as elsewhere, the site of operation should be thoroughly cleaned, and certainly before an operation it is a very easy matter, when a patient is under an anæsthetic, to use the post-nasal syringe with any antiseptic solution. After the operation the syringe should be again used, as it carries off blood-clots that accumulate in the nose and makes the resulting condition very much more comfortable for the patient.

I have seen the use of chloroform stopped in a case of mastoid operation when it was discovered that adenoids were present. The adenoids were first removed on account of the fear of the operator as to the results of the chloroform in that condition; but as chloroform is the most commonly used anaesthetic when we operate for adenoids, it is rather difficult to know how to act. It is certainly much easier to administer chloroform in these cases than ether.

Dr. T. L. Shearer: I went several years ago to a Hospital in London and I saw a resident operate on five adenoid cases in succession. He used Nitrous Oxide anæsthesia and had the patient sitting bolt upright. Double tonsillotomies were done in all these instances and also curetting of the post-nasal space. It was the quickest work that I have ever seen. Another matter in connection with operating in that space is the tendency, even with the greatest care, to overlook two little masses of lymphoid tissue immediately in the neighborhood of the Eustachian tube. These masses are practically separate and have been called "tubal-tonsils." Another point is the very serious hæmorrhage that sometimes occurs in these cases and for that recently has been introduced the hypodermic use of the normal salt solution, containing 2½ per cent. of gelatin. That has given some very brilliant results on the Continent: 150 cc. normal salt solution, containing 2½ per cent. of gelatin, were used as a single injection and if necessary repeated. The-

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site preferred is in the neighborhood of the breast. In all the cases reported it worked admirably.

As regards the use of a general anæsthetic, I certainly prefer ether All children that have these adenoid tendencies are particularly susceptible to shock, and I do not think it is the proper thing to use chloroform, bearing that in mind. I think ether is much more stimulating and they come out of it much more quickly than they do out of chloroform; at least you don't feel that you are running the same risk as in chloroform.

Dr. E. W. Beebe: Only this last week a physician's child from a neighboring city was taken to Milwaukee, to be operated on by one of my colleagues for adenoids, and it died from the effects of the chloroform administered. It was my practice formerly to administer chloroform in these cases, but I have given it up entirely and use ether instead. It seems to be exceptionally dangerous in cases of that kind.

Question. "Was the child in the upright position?"

Dr. E. W. Beebe: I think not. The doctor is one of our brightest men; and I think the operation was done in the proper manner. The child died almost immediately during the operation, without any premonitory symptoms.

Dr. H. W. Hoyt: Did this child have any preparation beforehand, and were the stomach and bowels properly cleansed before operation?

Dr. E. W. Beebe: I do not know.

Dr. H. W. Hoyt: It is just as necessary to prepare a child for operation for adenoids as for ovariotomy or any abdominal operation. It has been my custom to have the child's bowels thoroughly moved the morning before the operation and no breakfast given. With that preparation I should not have any particular fear of chloroform. Ether causes more mucus, more choking and more tendency to nausea and vomiting afterwards.

Dr. J. B. Garrison: It is always my custom to advise that the operation for the removal of adenoids be made if the obstruction in the post-pharynx is sufficient to cause continuous, or even marked intermittent, interference with nasal respiration. The foreign body should be removed as soon as possible. Many parents are afraid to have their children submit to anything in the line of an operation, and wish medical treatment, which, as homœopaths, we ought to always use in the milder cases, but in many that have a large degree of obstruction, I have not been able to treat with any satisfaction and the operation is shown to be necessary at last.

Regarding the administration of chloroform, I think that the manner in which it is given has largely to do with the danger that is so much feared. Give it drop-by-drop and admit plenty of air, watching the patient carefully all of the time, and I look upon it as the best anæsthetic that we have; still, I have regarded the present state of fear that exists in the minds of many of the profession regarding the administration of it, and have lately used ether more than chloroform for my own protection. The close holding of the mask over the face of the patient that I have often noticed as the method of the anæsthetist is dangerous and should be avoided.

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PATHOLOGY OF SCLEROSIS.

BY G. DE WAYNE HALLETT, M. D.,
New York.

FORMERLY all chronic diseases of the middle ear which were non-suppurative in character were included under the term *chronic catarrh* and this was subdivided under various terms to indicate the *catarrhal* and the *post-catarrhal* stages.

The catarrhal designated that condition where the mucous membrane of the Eustachian tube, the tympanum, and the antrum were engorged and exudative, with plastic adhesions between the walls and ossicula, and where the calibre of these spaces was narrowed and the tissues thickened. The post-catrrhal represented the consequences of this process, in which there had been contraction of these hypertrophied and hyperplastic tissues, and a calcification of the articular surfaces, with tough and contracted adhesive bands between the ossicula (mainly the stapes) and the tympanic walls. In this condition the Eustachian tube was normally or abnormally permeable, the external canal large and dry, the membrana tympani generally thin and transparent, the ossicular chain ankylosed and bound by adhesive bands and the foot-plate of the stapes pressed into or ankylosed to the niche of the oval window.

From time to time writers have drawn attention to cases presenting the symptoms of the post-catarrhal type, but having a normally appearing drum-membrane, and lacking a history of previous catarrh.

Politzer, in the edition of his text book, published in 1894, describes these cases as not depending upon a previous exudative catarrh, but upon an insidious interstitial inflammation established in the deeper layers of the lining membrane of the cavity. He also reports three autopsies held upon cases of this kind in which there was found an osseous neoplasm ankylosing the stapes in the oval window and involving the vestibular lining. Other articles detailing experiments of testing, methods of diagnosis, autopsies and cases which appeared impossible of origin from the tympanic mucosa have emanated from the pens of Habermann, Moos, Bezold and Zwaardemaker.

Those who believe the sclerosis due to a previous hypertrophic tympanic mucosa describe the pathological steps as a lessening of secretion, a contraction and hardening of newly-formed bands and adhesions,

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and, from the long continued abnormal degree of pressure, certain changes manifested in the bony capsules, especially of the inner wall and above the oval and round windows.

Here there is a deposit of connective tissue and ultimately of osseous tissue, with rigid bands binding the head and cruræ of the stapes to the sides of the oval niche. By contiguity of structure and increased tension a similar process is developed in the lining membrane of the vestibule and with similar results. Added to this is the atrophy from non-use of the nerve-end organs, due to a non-transmission of ærial vibrations and direct pressure.

This description covers the essential conditions of sclerosis found within the tympanum and vestibule, but does not account for those cases in which all history of a catarrhal process is lacking, and of cases where no thickened mucous membrane nor adhesive bands are found post-mortem, and in which the drum-membrane and Eustachian tube are normal.

Sclerosis, in the sense that it is used in this article, is held to apply to that class of cases in which the membrana tympani is practically normal, the Eustachian tubes usually or unusually permeable, the bone conduction better than the ærial in all but the later stages, the ossicular chain frequently ankylosed, the tinnitus a marked feature, and for the tuning fork loss of the lower tones, and possibly over-sensitiveness to the higher tones marking the earliest stages, with subsequent loss of the higher tones in the later stages when nerve involvement begins.

In a pathological sense the interest in sclerosis centers about the condition of the two tympanic windows, the condition of the ossicular chain, the condition of the capsule lining of the labyrinth, especially in the immediate vicinity of the oval and round windows, and the process by which the auditory nerve becomes secondarily involved.

In the Archives of Otology (Vol. XXIII.) Politzer presents a paper on "Primary Disease of the Bony Labyrinthine Capsule," based upon sixteen cases observed alive and then examined after death. The development of these cases bore a striking resemblance to those usually styled chronic dry catarrh of the middle ear. Most of these cases were totally deaf, some were very deaf, all had vehement tinnitus and there were also such symptoms as occasional sensations of pain, heaviness, dullness of the head, loss of memory and occasionally vertigo. The cause was uncertain, owing to a low degree of intelligence; gout was present in two cases and syphilis was indeterminable.

On post-mortem examination there was found more or less *sharp*

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bony protuberances in the region of the niche of the oval window. These protuberances were covered with normal mucosa; they varied in size to that of a pea, of a pale yellow or reddish tint, and, while mostly in front or behind, they did in one case fill up the whole niche. Several cases exhibited an elevated promontory and both labyrinthine windows were considerably contracted.

For the most part the mucosa of the middle ear was normal, rarely thickened or gray, and only occasionally were there niches and excavations.

The stapes was thickened in body, roughened in its cruræ, once transformed into a solid piece of bone, and almost invariably immovable. The drum membrane appeared, as is usual in the aged, dull, thickened, opalescent and atrophic. The histological examination showed that the affection was a *circumscribed disease of the bony labyrinthine capsule*, as a result of which there was a gradual development of bony neoplastic tissue which pushed aside the normal bone, attacked the oval window and stapes, closing in the oval window and ankylosing the stapes. In some cases the greater part of the capsule was involved and the disease pushed toward the round window and the labyrinth.

In those who could hear slightly, Rinne's test was negative. Exceptionally the perception of low tones was lost by ærial conduction, whilst the shrill tones of Galton's whistle were often perceived up to its limit by those who still had some hearing.

In conclusion, it is stated that these pathological alterations are similar to those developed subsequent to syphilis. (Gradenigo. Int. Med. Congress, Rome, '93.)

In some cases the neoplastic bony growth caused considerable thickening of the labyrinthine wall and could be observed from the tympanic side by the more reddish promontory wall. This is spoken of as an hyperæmia depending upon a corresponding hyperæmia of the bony labyrinthine capsule.

The histological specimens were examined after being subjected to alcohol, chromic acid and decalcification.

In later cases Politzer found *isolated* diseased lacunæ of bone in the promontory wall near the inner meatus and the cochlea.

Bezold (Arch. of Otology, Vol. XXV., 1896) reports a case of a young man examined during life with a subsequent autopsy. Both drum-membranes were normal, except for one slight atrophic scar, the cause of which was unknown.

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Whisper heard { Left, 25 cm. / Right, 6 cm.

An *A* fork on vertex is heard 15 seconds longer in the left than in the right ear.

Rinne's test with *A* fork was on both sides,—negative.

Rinne's test with a^1 { Right, 10 seconds. / Left, 9 seconds.

Lower tone limit, C^1 to F^1, were not perceived by air conduction.

He had, then, a lengthened bone-conduction for low tones, marked negative Rinne, and defective air-conduction for low tones.

Macroscopic examination showed the cavity free of secretion, with a pale and normal mucosa. The stapes lacked obturator membranes, the cruræ were very fragile and the foot-plate was of a paler color than the surrounding bone and was firmly ankylosed in the niche of the oval window. The mucosa of the Eustachian tube was of normal appearance. *Manometric* tests showed a reduced mobility of the articulations and proved that pressure had no effect in moving the foot-plate of the stapes.

After decalcification sections were made for the ***histological examination.*** The mucosa on the left was normal. In the right it was thickened over the promontory, poorer in nuclei and contained fewer blood-vessels. The tensor tympani muscle fibers were reduced on both sides. The stapedius muscle was well developed, in the better, and poorly in the more defective, ear.

The articular surface of the head of the stapes was unchanged. At the stapedio-vestibular symphysis on both sides there was at the margin of the pelvis-ovalis a deposit of spongy bone, poor in medulla, and which in the right ear occupied the entire promontory up to the round window.

There was no sharp line of demarcation between the spongy and the compact bone.

The foot-plate was thickened on both sides, and especially in the right ear, where in places it was five times its normal thickness.

The labyrinthine side of the foot-plate was smooth and not thickened. The tympanic side presented all the thickening, which was most marked in the centre and less at the edges.

The hyperplastic bone was of spongy form, with many medullary spaces and some giant-cells. A bony union existed between the thickened foot-plate and the bony walls of the niche.

The cochlea and labyrinth appeared normal. In this case then there

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were no conditions in the tympanum or labyrinth to explain the symptoms other than the fixation of the stapedio-vestibular symphysis.

Bezold believes the effect would be the same whether the fixation resulted from ossification of the foot-plate with the walls of the oval window, calcification of the annular ligament, or from ligamentous fixation.

Schwaardemaker (Archives of Otology, Vol. XXVI.) reports fifty cases of sclerosis examined with reference to their tone limits by the chromatic or continuous (Bezold) scale. Thirty-two of these having existed for a length of time are considered to be in the earlier stages and in these the upper-tone limit is raised two or more half-tones above what is normal for the ear of that age.

In five cases the upper-tone limit is normal and are considered to be in the transition stage, having existed for a somewhat longer period of time.

Of the final thirteen cases, some few are considered to be uncertain, but they are mainly advanced cases and the upper-tone-limit is lowered.

Schwaardemaker's typical initial symptom in primary sclerosis is, almost without exception, a displacement upward of the upper-tone-limit above the normal limit. This may remain stationary during the first years and gradually contract or become displaced downward.

He also believes, with Urbantschitsch, that paracusis Willisiana originates in the labyrinth, and he adds that it may mark the progress of the process of sclerosis to the inner ear.

They believe paracusis Willisiana to be an altered condition of the excitability of the sound-perceiving apparatus, characterized by the fact that the excitation-threshold is elevated, while the difference-threshold has remained almost unchanged, and that both would be elevated if it depended upon the conducting apparatus. In the sixteen cases published by Politzer he states that the tympanic mucosa was generally normal, etc., and says nothing of finding adhesive bands in the tympanum, but reports a neoplastic bony growth, spreading from the labyrinthine capsule, pushing over the inner surface of the foot-plate of the stapes to occlude wholly, or in part, the oval window, also growing over the outer surface of the foot-plate and up on to the promontory, and partially, or entirely, ankylosing the stapes on to the oval niche. In a few cases the bony neoplasm involved the cochlea up to and beyond the first convolution.

It may be accepted, then, that there are cases of what appears like our old dry catarrh of the middle ear, in which there are no evidences

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of a previous hypertrophic catarrh, and which have their origin in the bony labyrinthine capsule and result in a bony neoplasm, which occludes and ankyloses the stapedio-vestibular symphysis, grows over and occludes the round window, pushes over part of the promontory and extends into the cochlea.

It may be well to state that the sequelæ of chronic proliferous middle ear catarrh, with its progressive deafness, adhesive bands, adhesion of the cruræ of the stapes to the niche of the oval window, thickening of the mucosa of the round window membrane, calcification and ossification of the stapedio-vestibular ligament, is a well recognized and separate disease.

These two pictures have many points of similarity, but to diagnosticate the former, we have,—the insidious character of the deafness, early development of tinnitus, no evidence of a preceding middle ear catarrh, normal, or but slightly retracted, membrana tympani, visible redness of the promontory wall, normal permeable Eustachian tubes, negative result in Rinne's test, loss of the lower tones, and perhaps an elevation of the whole scale in the earlier stages, and a subsquent loss of the higher tones when nerve involvement begins.

To account for nerve involvement in sclerosis we may assume that with the growth of a bony neoplasm in the labyrinth there is an increase of pressure in the whole internal ear, which, being maintained, atrophies the delicate nerve end organs. Perhaps in the early stages there is hyperæmia or congestion having contraction and atrophy as a secondary result. Atrophy, too, may, in a measure, follow non-use.

The cause of this disease is obscure, but the process originates, according to our present information, in a primary neoplastic growth in the bony labyrinthine capsule. Isolated diseased lacunæ of bone have been discovered in the promontory wall near the internal meatus. The pathological bony growth shows more bone corpuscles and larger bone spaces than normal bone and take a deeper stain from the staining fluid.

The spaces are filled with cells, connective-tissue, and blood-vessels. In a few specimens there were found giant-cells, osteoblasts, and osteoclasts.

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THE MECHANICAL AND LOCAL TREATMENT OF SCLEROSIS OF THE MIDDLE EAR.

BY GEORGE W. MCDOWELL, A. M., M. D.,

New York.

IF the term sclerosis of the middle ear is to be limited to that class of cases characterized by deafness and tinnitus, due to a bony anchylosis of the ossicular chain with fixation of the stapes to the border of the oval window, without preceding exudative inflammation in the tympanic cavity, then the field of usefulness for all methods of local and mechanical treatment becomes so circumscribed as to be practically nil. If on the other hand, the term may be extended to embrace the conditions resulting from the atrophic stage of chronic exudative otitis media, then the outlook, while still very poor, is slightly more encouraging.

In the first form, or sclerosis proper, the pathological change of prime importance is the fixation of the footplate of the stapes to the margin of the fenestra ovalis forming a solid bony union as the result of an osteitis at this point. In addition there may be an osseous closure of the fenestra rotunda, together with degenerative changes in the labyrinth. These changes impair the conductive power of the middle ear and the receptive power of the auditory nerve. To expect to affect favorably such a pathological condition seems to be almost beyond reason. No mechanical force, short of one which would crush the bones, can be expected to break up the bony union existing in these cases, and without mobility of the stapes no improvement can be expected. With a movable stapes, and the round window closed by calcareous deposits, the situation is in no wise improved. It has been shown that the vibration of the ossicular chain is not a molecular vibration, but a vibration *en masse*. This vibration can only be conveyed to the fluid of the labyrinth when the footplate of the stapes is movable and the membrane of the round window is in such a condition as to readily yield to the to-and-fro movement of the labyrinthine fluid. This being the case, what benefit can result from any treatment which stops short of an absorption of these osseous formations? An attempt in this direction has been made by several aurists who have chiselled away the

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anchylosed footplate of the stapes, but as yet without conspicuous success. The relief of the distressing tinnitus of the sclerosis, which in practice offers as great difficulties as does the improvement in hearing, should be theoretically more amenable to treatment. Since this may be due to any one of several causes, the probability of relief will depend upon the discovery of its origin, whether it be due to increased labyrinthine pressure, changes in the venous or arterial circulation independent of pressure, or changes in the auditory nerve itself.

Turning now to the second form of sclerosis mentioned above, we find changes of a somewhat similar character to those found in true sclerosis. The anchylosis of the ossicles is of a fibrous, not a osseous, character. They are bound to each other and to the adjacent walls of the tympanum by bands of tissue which have formed in the preceding stage of exudation. The drumhead is retracted; the mucous membrane lining the cavities dry and lifeless; the Eustachian tube may be wide open, or generally stenosed throughout its length, or present bands of constriction at various points. The stage of active inflammation has passed and atrophy has taken its place.

To improve the hearing and relieve tinnitus in such a condition as this the circulation must be improved, new cells must form in the atrophied membrane to enable it to perform its old functions, and the bands which limit the mobility of the ossicles must be stretched or broken. Theoretically this condition should promptly respond to the stimulation of properly applied aural massage, but every aurist has found its treatment to demand infinite perseverance, which only now and then is rewarded with brilliant success.

One of the earliest methods of treatment for this class of cases was the use of the catheter for inflating the middle ear, which at the same time opened the Eustachian tube and by increasing the air pressure in the tympanum tended to restore the drumhead to a more normal position, with a consequent outward movement of the chain of bones. Later this method was largely superseded by the introduction of the Politzer air bag, and the catheter especially in this country fell into disuse. When the air did not readily enter the middle ear, medicated vapors such as chloroform, iodine and many others alone or in combination were employed to open the tube and stimulate the mucous membrane of the tympanum. When these methods failed recourse was had to the Eustachian bougie made of catgut, whalebone, laminaria and other materials. Laterly electrolysis has been used in some cases of obstinate stricture with good results, the bougies employed being made of gold.

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To restore the retracted drumhead to its normal position naturally suggested exhausting the air from the external auditory canal. For this purpose Siegel's otoscope, which had been mainly used for diagnostic purposes, was superseded by the "Rarefacteur" of Delstanche by which the massage of the tympanic membrane could be accomplished much more thoroughly. By means of this latter instrument the drumhead may be made to move to and fro with more or less rapidity and amplitude of movement, carrying with it, to a certain degree, the chain of bones. Delstanche contended that when a machine was rusty and moved with difficulty, the first thing to do was to oil it. Acting on this theory he was accustomed to inject fluid vaseline through the Eustachian tube into the drum cavity, before using his instrument to massage the membrane and ossicles. Of his results we can not speak with authority, although he assured us they were good, but from the fact that this method is little known and less used we may infer that it did not prove all he had hoped for it.

With the idea that in order to obtain a positive movement of the ossicular chain the power must be applied directly to it, Lucæ, of Berlin, introduced his "pressure-probe." With this instrument intermittent pressure is applied to the short process of the malleus whereby the handle of the malleus is rotated outward, carrying with it the drumhead and relieving the inward pressure of the chain of bones. This method of treatment, while painful in its execution, has been productive of benefit, increasing hearing and reducing tinnitus. Delstanche claimed that the movement of the ossicles by this method was no greater than that obtained by his use of the "Rarefacteur." Politzer states that the improvement following the use of the "pressure-probe" is very rarely permanent.

About ten years ago renewed interest was aroused both among aurists and the laity along the line of treatment of those cases of long standing deafness, which had as a rule withstood all methods applied for their improvement. The occasion of this renewal of hope was the reports of cures following treatment with the phonograph. This led to the invention of a number of instruments which had for their object the massage of the middle ear and the stimulation of the dormant auditory nerve by means of sound vibration more or less musical in character. The type of these instruments is that one known as the "Vibrometer" which was widely heralded as the panacea for all forms of deafness. After a more or less extended trial many modifications of this type were devised, the sponsors of each one claiming better re-

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sults from his own machine than could be obtained from any other. The idea was advanced that tinnitus aurium could be cured, even when hearing was not improved, could we but discover the exact pitch of the subjective noise and use it in the treatment of the case. The theory that sound waves of corresponding amplitude would, according to the law of interference, destroy each other and produce silence seemed to be proven by the success that attended the treatment in some cases, but in very many others was a total failure, and still awaits the investigator who shall establish the relationship upon a more scientific and satisfactory basis. We have here a large and as yet uncultivated field for future work. The introduction of the reed organ by Dr. Houghton as better adapted to produce a musical tone corresponding in pitch to a subjective noise, and at the same time permitting massage of the middle ear by the vibration of a column of air, was an attempt to solve the problem from a new direction, the earlier instruments relying for the production of tones upon vibrating strings or a metallic diaphragm as in the phonograph and in the various adaptations of the telephone receiver in connection with a faradic coil. All of these devices have proved more or less disappointing as is clearly shown by the many modifications which have run their brief course and disappeared from view. That a dormant auditory nerve may be roused to renewed activity by subjecting it to the stimulating influence of sound waves of sufficient intensity has been shown in more than one instance, but in order to make such an improved receptivity practically available, the interference to sound conduction existing in the middle ear in all cases of sclerosis must be first removed.

Turning now from the mechanical methods of massage, we find that medicinal substances, either in the form of liquid or a vapor, have been widely used by aurists of all countries, for injection into the middle ear through the tube. The object of this form of treatment is to cause an irritation of the lining mucous membrane with a resulting secretion which tends to soften the bands of adhesion binding the ossicles together. Aside from medicated vapors steam and hot air have had their advocates. Politzer is of the opinion that the benefit from all forms of injection is mainly due to the accompanying inflation of the middle ear.

The personal experience of the writer in the treatment of middle ear sclerosis, according to the methods referred to in this paper, in addition to various others not mentioned, in connection with the internal remedy, or without its aid, has been disappointing in the large ma-

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jority of cases. The inventor of one of the instruments mentioned, some years ago claimed to cure sixty-five per cent. of the cases of chronic deafness applying to him for treatment, but in my hands the same method faithfully applied did not improve twenty per cent., making a high estimate. It may be most charitable to assume that he either erred in his diagnosis, or else his method of testing his patient after treatment was of such a character as to cause self-deception. The present unsatisfactory status of the treatment of middle ear sclerosis should not cause us to abandon these cases as forever hopeless, but only stimulate us to increased research along this line, condemning no method of treatment before extended clinical experience has definitely fixed its value.

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THE INTERNAL REMEDY IN SCLEROSIS OF THE MIDDLE EAR.

BY C. GURNEE FELLOWS, M. D.,

Chicago, Ill.

WHEN asked by the president to write upon this subject, "The Internal Remedy in Sclerosis of the Middle Ear," it seemed to me that the answer could be best expressed by the word "ineffectual," and the more I studied it, the more I believed that this reply was literally true. At the same time, I believe that in studying a subject, we may acquire some facts which may be of more value than merely a negative statement, and if we cannot arrive at another point of view we will at least learn what we can do to prevent our patients getting into this incurable stage. My own experience would simply pass for what it is worth, if taken by itself, and I therefore took the liberty of writing a circular letter and sending it to 125 members of this society, asking their opinions on this subject. I received in reply about 75 letters, and I believe that we are better enabled to form an opinion from a resume of these letters than from the statement of any individual.

The first fact that strikes me, and is borne out by at least four-fifths of the replies, is that we ought not to claim results from the use of the internal remedy alone when the fact exists that few, if any of us, have depended upon the internal remedy alone. We are all of us very much more confident of the results obtained from inflation, catheterization, operations upon and treatment of the nasal and naso-pharyngeal conditions, and the application of the recently recognized methods of aural massage. Since this is true we can hardly claim results from the lesser line of treatment when we have already applied the more powerful.

There is undoubtedly a stage preceding the sclerosis, recognized as a hypertrophic catarrhal inflammation, and it may be possible that an atrophy may be a preceding condition, both of which are capable of being helped by both local and internal treatment.

It is an undoubted fact that we, of this generation, are preventing many of these serious conditions which we now find existing by our intra-nasal operations and treatment, and just so far as we are prevent-

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ing deafness, suppurative inflammation, etc., so far can we by our modern methods prevent to a greater extent than hitherto the development of true sclerosis. There is no doubt in my mind, and I am the more sure of it from the fact that many of the letters received bear me out in it, that remedies do have a distinct field in addition to the local means of treating preliminary hypertrophic conditions and symptoms. At least 90 per cent. of all of the answers to my inquiry affirm that internal remedies do relieve such symptoms as tinnitus, closure, undue patency of the Eustachian tube, dizziness, and other concomitant symptoms attendant upon sclerosis, and, therefore, though not directly capable of removing pathological conditions, they do remove annoying symptoms.

A good many of the letters received are decidedly worthy of note, and if I had time I should like to quote extensively from them, but a few quotations will suffice:

"I never give internal remedies in middle ear sclerosis. I would as soon think of giving an internal remedy for corns. When I hear some of the claims of 'cures' performed in conditions like these, especially by high potencies, it makes me blush for my profession, and especially for my school."—(Francis B. Kellogg.) This is rather a strong statement, but repeated in different language a good many different times.

"It is said that an artist must mix his paints with brains in order to produce a masterpiece. I suspect that in some similar fashion a physician must mingle his remedies with some intangible or mysterious ingredient in order to secure curative results in certain diseases, as, for example, in the one concerning which you make your inquiry. I fear I have not the secret. I have prescribed a good many drugs in sclerosis of the middle ear, often carefully, and, as I thought, cunningly, and have paused in expectant attention for 'results,' as a small boy awaits the explosion of a fire-cracker he has just lighted. I am still waiting——."—(Harold Wilson.)

A number of other interesting and appropriate replies were practically the same in different language, and but one of my correspondents claims good results in what he diagnoses as sclerosis of the middle ear, namely, "*Mercurius dulc.* 3x; four times a day long continued; *Iodine;* changes of mucous membrane, pharynx, Eustachian tube and middle ear. *Nitric acid;* subjective symptoms of roaring of the ears, better by riding in a carriage."—(McDermott.)

Now as to the remedies and what they can accomplish: In all of these replies, and in personal conversation with men who did not reply by

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letter, there have been mentioned forty-five different remedies, all of which have been prescribed for the above mentioned disease, presumably in the hope that if it did not accomplish anything, so far as the sclerosis was concerned, they might affect concomitant symptoms or hunt out preliminary conditions and so help the patient. I hereby append this list of forty-five remedies, as I consider that it covers practically the pathology and symptomatology of the condition mentioned:

REMEDIES.

Kali mur.,	Lachesis,	Natrum mur.,
Kali iod.,	Causticum,	Calcarea pic.,
Graphites,	Kali phos.,	Secale,
Mercurius prot.,	Phosphorus,	Bryonia,
Mercurius dulc.,	Actea,	Nux,
Sulphur,	Sanguinaria,	Ignatia,
Kali bich.,	Ferrum pic.,	Alumina,
Baryta carb.,	Cinchona,	Hydrastis,
Calcarea phos.,	Arsenicum iod.,	Natrum silico fluor.,
Iodine,	Pilocarpin,	Ammonium mur.,
Silicea,	Hepar sulph.,	Manganum,
Pulsatilla,	Carbo an.,	Kali carb.,
Calcarea carb.,	Strychnia phos.,	Hydrobromic acid,
Ferrum phos.,	Calcarea fluor.,	Petroleum,
Carbo veg.,	Nitric acid,	Dulcamara.

Of this list there are thirteen remedies which are mentioned more than three times by all of the correspondents, so that the first thirteen remedies of this list will probably cover the conditions in most of the cases for which we are in the habit of prescribing. Of these thirteen there are seven mentioned more than five times, and the only remedy which is mentioned more than all of the others, not only in these letters, but in material articles, medical conventions and text-books. *Kali muriaticum,* seems to command the highest praise; and, in this connection, I may say, that I believe the claims of this remedy are due to the teachings of the New York Ophthalmic College; that published articles, lectures, etc., oft repeated and quoted, have led us to believe more in this remedy than results will warrant. Upon this subject I quote from one of my correspondents: "The glories of *Kali mur.* were so grandly painted at the corner of Third avenue and Twenty-third street, New York, during the six months that I loitered around that

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corner that I really expected this remedy to do something for me in sclerotic conditions of the middle ear. It proved an *ignis fatuus,* and after five years of continued pursuit I gave it up, completely possessed of skepticism as to any power of this remedy in this direction. After reaching this state of mind regarding *Kali mur.,* I was not prepared to pin my faith to any other. I have reached the decision, after ten years of monkeying with internal remedies for this condition, that I might as well have used faith healing, mind cure, osteopathy, or any other vagary for that condition. If local treatment of the nose and throat, together with internal remedies for these conditions, does not help matters no internal remedy solely for middle ear sclerosis will be of any more benefit than gazing at the pole star an hour every evening."—(S. C. Delap.)

In my replies I have practically the same adverse reply from several of the doctors in that institution, and I believe that we can draw from this conclusion that this remedy, no more than any of the others mentioned, is capable of producing results in incurable conditions. As suggested in one of the replies, I believe that we do ourselves harm in claiming results from internal remedies, when it can be demonstrated that they are of no use, and above all when the case has been treated by other and more radical local means; but I do believe that among these forty-five remedies mentioned we have ample proof that any or all of them in suitable conditions are of avail in the preliminary stages of serious middle ear deafness and are capable of helping us out in the removal of annoying symptoms, and probably in the prevention of gradual and more calamitous results.

There is one point to which I wish to call especial attention: We have seen in recent years a great deal of the writings of Robt. T. Cooper, of London, and many of us have thought, from the report of cases, that the doctor was capable of accomplishing results we were unable to attain, and I am therefore glad to give you the gist of his reply to my inquiry:

"Sclerosis is a consequence of sub-acute and gradually progressive changes of the middle ear. Its removal with perfect restoration of the functions of the organ is as impossible as is the removal of sclerosed conditions of other organs that owe origin to a like cause."

I am greatly indebted to, and want to here publicly thank those who answered my letter, for their kind assistance. I believe that the symptoms enumerated by the many correspondents for the various remedies mentioned is a valuable contribution and worthy of preservation, that

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even if sclerosis in its worst form is incurable that these remedies may help us and be of use in our preliminary struggles.

LETTERS RECEIVED IN ANSWER TO REQUEST SENT OUT FOR OPINIONS ON THE CURABILITY OF SCLEROSIS OF THE MIDDLE EAR BY HOMŒOPATHIC REMEDIES.

EDITED BY C. GURNEE FELLOWS, M. D.

In my paper upon the subject "The Internal Remedy in Sclerosis of the Middle Ear" the general conclusions arrived at were, first, the internal remedy has no definite curative action; second, internal homœopathic remedies undoubtedly play an important part in the curability of the preceding inflammatory conditions; third, forty-five remedies were mentioned by about seventy different contributors. Not over twenty of these remedies were mentioned more than once, and hence their indications are of most importance. In compiling these letters, I have taken only such salient indications as were mentioned particularly, none of the answers going into the question of special characteristics.

Kali muriaticum was mentioned in some way or other by about thirteen contributors, prevailing opinion being that it is the one remedy when no other is indicated upon its general constitutional indications.—(Custis.)

Associated Eustachian and pharyngeal catarrh.—(Shearer.)

Membrane retracted and thick, external canal dry.—(Shepard.)

Great retraction and reduction of the handle of the malleus; cone of light small, bone conduction greatly increased; no tone deafness.—(Dowling.)

Early and middle stages of deafness; slowly progressing rigidity of the sound-conducting apparatus; while best indicated in hyperplastic conditions of the middle ear, which are preceded by hypertrophic states, it has proven, clinically, of decided service in the more direct hyperplasia, and even the atrophic degeneration of true sclerosis, which may be explained by the doubted relation of this remedy to the uric acid diathesis and its characteristic control over connective tissue elements.—(Bellows.)

Recommendations for the use of *Kali mur.* were also given on general grounds by McDowell, Hasbrouck, King, Fellows, Brooks, Boice-Hays, Deady, and Hooker.

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Kali iodine was mentioned eight times with the following indications:

Darting pains in the ears; deafness; atrophy of glandular structures; scrofulous and syphilitic subjects.—(Beebe.)

Tinnitus the marked symptom.—(Shearer.)

Hypertrophy of the mucous membrane of the nose and nasaœ pharynx.—(Shepard.)

Specific taint; frequent attacks of pseudo-hay fever; hyperplasia of the nose and nasaœ pharynx.—(Fellows.)

The well known general indications of the drug also cause it to be recommended by MacLachlan, Townsend, Campbell, Hasbrouck, and King.

Graphites—Hearing better in a noise, as riding in a street car.—(Quay, 30x to CC.)

Reverberation of the patient's voice in his own ears; ears feel stuffed; cracking in the ears when eating or moving jaws; dryness of meatus and membrana tympani. The membrane covered with white coating, history of eczema.—(Kehr.)

Tinnitus, voice reverberates; his own voice echoes; cracking in the ear when moving jaw; dryness in the ears, hears better in a noise.—(Shepard.)

The well known general indications of this remedy also suggest its use by King, Dudley Wright, McDermott and Beebe.

Mercurius proto-iodide—Associated catarrh of the pharynx.—(Shearer, 2x.)

General indications, MacLachlan, and Campbell.

Mercurius dulcis—Slowly increasing deafness, strictly scrofulous diathesis, fauces chronically inflamed, tongue dry and flabby; membrane of pharynx about the Eustachian tube thickened and sensation as if the parts were scalded; 3x long continued.—(McDermott.)

Extension of catarrh over naso-pharyngeal mucous membrane.—(Townsend.)

Membrane retracted, thick and movable by inflation; closure of Eustachian tube, pressure in ear from without.

When the tube is stopped, when inflation causes moist sound through the auscultation tube; when the patient can outline the tube by the tickling sensation of it.—(Shepard.)

General indications.—(Keeler, McDermott.)

Sulphur—Recommended by its well known general systemic indications.—(Lewis, Campbell, Brooks, and MacLachlan.)

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Kali bichromicum—Full drawing feeling in ears; stinging pain extending to the throat, roaring and singing; hypertrophy of the mucous membrane, stringy discharges.—(Kehr, Townsend, Brooks, Custis, Hasbrouck.)

Baryta carb. and *iodide*—Harshness of hearing in old people; when the drum withers, shrivels, and almost breaks it is so dry. Dry catarrh of the nose, Eustachian tube and external canal.—(Kehr, Stewart, Paterson, King, MacLachlan.)

Calcarea phos.—Lymphoid hypertrophy in the naso-pharynx, general systemic indications.—(Lewis, Hooker, Townsend, Campbell.)

Iodine—Change of tissue, in character of the mucous membrane, of the pharynx, Eustachian tube and middle ear; chronic cases.—(McDermott.)

Extreme susceptibility to noise, buzzing in ears, with hoarseness and dry skin.—(Beebe, McDermott.)

Silicea—Very sensitive to voice, with tinnitus, closing of Eustachian tube, loss of smell, ulcer of septum.—(Beebe.)

Pulsatilla—Family dyscrasia and tendencies; constitutional symptoms.—(Lewis.)

Blonde type, suppressed menses from getting feet wet, discharges thick and bland, proliferous inflammation.—(Kreider.)

Ferrum phos.—Derangement of the circulation, general indications.—(Lewis.)

Carbo veg.—Confusion in head, vertigo, lack of cerumen.—(Beebe.)

Lachesis—Rustling, tinnitus, very sensitive to sound, especially at climacteric.—(Shepard.)

Causticum—Tendency to ossicular anchylosis, to calcareous deposit, with marked tinnitus and autophony; especially in those of gouty diathesis.—(Bellows.)

Crawlings, as of an insect, beginning in throat and extending to Eustachian tube; voice comes from the ears instead of the mouth; sounds as if head were in a barrel.—(Kehr.)

Actea tincture—Tinnitus, vertigo.—(Dudley Wright, Helfrich.)

Hydrobromic acid—Tinnitus.—(Helfrich.)

Ferrum pic.—Tinnitus.—(Helfrich and Shepard.)

Calcarea fluor.—Catarrh everywhere.—(Hasbrouck.)

Manganese dioxide—Catarrhal inflammation; hearing steadily decreases; membrane not retracted or thickened; Eustachian tube easily opened—hearing not benefited; manipulation of auricle causes a blush

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to come over the membrane, caused by injection of vessels from the promontory.

Strychnia phos.—Lowering of the upper tone limit with auditory hyperæsthesia, especially in irritable or sedentary people with habitual constipation and disordered digestion.—(Bellows.)

Kali phos.—Loss of hearing for high tones, with general nervous depression and weakness of perception, especially in aged people with atrophic tissues.—(Bellows.)

Petroleum 6x—External glands dry; tone deafness.—(Quay.)

Carbo an.—Difficulty of locating sounds.—(Quay.)

Nux and *Sulphur* alternately, especially in constipation.—(Wright.)

Phosphorus—Deafness to human voice—noise and music better heard.—(Bellows.)

Natrum and *Silico fluoride* 12x—Used empirically for its several constituents.—(Fred. D. Lewis.)

Of all the other remedies mentioned once, no special indications more than those commonly recognized are given. It will be seen that these answers are incomplete, and in many cases the writers recognized the fact that they were not to be published, and it is unfair to expect that they should cover the knowledge on the subject. It is, however, a pretty good indication of the value of the few remedies mentioned that they were voted upon so frequently, or infrequently, as the case may be, that they were indicated in all cases mostly upon their well known symptomatology.

The letter which was sent out asked for an immediate and impromptu answer, and the answers received were gratifying to the writer of the original paper. From the general replies I should gather that *Hydrobromic acid, Pilocarpin, Calcarea picrata, Ignatia,* etc., which are so highly lauded occasionally by articles in the journals, are indicated only upon special symptomatology and not generally useful. I also gather from the letters that as a rule we are all probably careless in selecting our remedy for special conditions, whereas constitutional symptoms and indications should be more thoroughly taken into account.

Thanks are again expressed to the correspondents for their kindness in replying.

DISCUSSION UPON SCLEROSIS OF THE MIDDLE EAR.

Dr. D. A. MacLachlan: The doctor has given a very complete *resume* of the subject, and he has brought before us an array of the most recent and best authorities, together with some conclusions of his own,

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which I think must appeal to us logically. He has made very clear the difference between the ordinary catarrhal forms and the sclerotic—those under discussion—I think the most important thing is to be able to differentiate these from the catarrhal cases that are so closely simulated; we don't often differentiate or diagnose them. We can hope to accomplish something in their treatment by local application, by internal remedies, and even by mechanical means, but in these sclerotic cases, in my experience, there is very little to be expected from any form of treatment. I have come to regard most of them as originating in a uric acid diathesis. I believe that a great deal of our catarrhal conditions—disposition of persons to take cold—is due to a uric acid diathesis, and I think that will account for the bony changes which occur in the vestibule and cochlea, but particularly about the round window and stapedio-vestibular ligament. The cases generally exist at the same time, and I think in families which are disposed to uric acid conditions, that deafness comes on at a certain time in life, gradually progressing until sclerosis eventually removes the hearing entirely. In such cases there is very little to be done by ordinary means of treatment; I think mechanical measures will often, perhaps, only hasten the difficulty. The experience of the mechanical instruments, like the vibrometer, have not been extremely satisfactory to the profession, because so many of them have been tried upon cases of this character. It appears logical at first, and it is logical, I think, that mechanical massage will benefit the catarrhal cases. These are due to simple mucous inflammation and hypertrophy. But in conditions involving the deeper structures where the auditory nerve becomes involved and hypertrophied, their submission to the use of an instrument like the vibrometer will only make the case worse. Instruments could be modified possibly, now that we have the principle, so as to aid us in the treatment of sclerosis, but in these cases we must look for benefit in the early stages to internal treatment rather than local or mechanical.

Dr. H. P. Bellows: I want to say just a word in general commendation of this paper. I think it is an extremely useful one, and that it is one which we shall want to refer to in future in our transactions, when we wish to refresh our knowledge of this subject.

There have been one or two interesting outcomes of pathological study—one in regard to the advance of deafness of sclerotic cases. This was formerly supposed to be due to degenerative atrophy from disuse. I think we find as a result of this study that they are due rather to atrophic changes, or degenerative changes, in consequence of the direct progress of the disease. I was glad to hear Dr. MacLachlan speak in regard to the relation of sclerosis to the uric acid diathesis. You remember yesterday I hinted at that as being a subject which has been especially interesting me for many months past. I expect to follow it up.

Dr. G. DeW. Hallett: In the preparation of this paper it was not possible to present much that was personal, but I have drawn freely from

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those sources of information which were open to me. However, I would like to make a plea in closing this discussion for such changes of method as will permit us to divide our cases of chronic catarrh of the middle ear, so as to include those which have resulted not from a previous catarrhal condition. This is quite applicable to those who have the responsibility for entering diagnoses in the record books of our hospitals, so as not to put down all those cases which manifest poor hearing and tinnitus, as o. m. c. c.

Dr. George Rhoads: I hope this society will excuse me for attempting to discuss a subject of which I know but little. I have used internal remedies, among them *Kali mur.*, but I have never seen any benefit from them. I think my experience has been the experience of nearly all. I have come to the conclusion that it is a waste of time to attempt to cure a sclerosis of the middle ear with internal remedies.

Dr. F. Park Lewis: The lesson that my practice in sclerosis has taught me, if anything, is this: That in dealing with this condition, which is not local merely, we have a form of trophic neurosis. Where the origin of that particular neurosis is is difficult to say.

I am very much interested in Dr. Dundas Grant's experience. The results he has observed suggest that the sympathetic relationships extend through the spine and involve the nutritive functions of the ear and this will certainly deserve further study. The first conclusion to which my work has led me is that it is possible in a large number of cases to anticipate the probable development of sclerosis later in life, and second that by proper treatment these tendencies may be modified. I have a number of families among whose children I shall ultimately anticipate such changes in the ear, and hope to prevent organic changes that otherwise are inevitable.

The first important point in these cases is the necessity of distinguishing between those in which we have post-pharyngeal or nasal involvements which need correction, and in which we have simply hereditary tendencies to sclerosis of the middle ear structures. Dr. Fellows very truly said: "I am sure we are lessening deafness by giving proper attention to the correction of the nose and throat in early life." Of that there is no question. I have had a number of children under my observation in whom adenoids, which had not produced the typical adenoid symptoms, yet existed and in which organic disease of the ear was present which might not possibly become sclerotic, but which would result in catarrhal deafness. I know a woman whose mother is one of eight children, every one of whom has had some manifestation of middle ear sclerosis, and who are now people beyond middle life. The disease begins in most of them at forty, or thereabout, slowly progresses until it reaches a condition of almost total deafness. I am very doubtful when we have gotten an organized structure occluding the stapes in the oval window whether any measures possible can cause absorption of the neoplastic tissue; but if we are dealing with a trophic neurosis with inherited tendency, I believe it is possible to

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anticipate that condition and prevent these organic changes which ultimately result in fibroplastic adhesion. What particular remedies may be of value I am not prepared to say, but I am one of those who believe that molecular changes in the human body can be brought about by drugs which act molecularly. That does not necessarily mean attenuated remedies, as every change we get is through the molecular action of the cellular structures of the human body. The only remedy, aside from those having molecular relationships, which appeals to me and as one having possible value, is *Cataphoresis,* i e., the possible solution of the deposits around the ossiculæ by carrying such drugs as iodide of potash by means of electricity into the structures.

Dr. T. M. Stewart: The proper thing to do in these cases is to prevent the trouble. I endorse also what you have just heard from Dr. Lewis.

We have, as specialists, a duty to perform that has not been brought out very clearly so far, and that is, all we say here does not get to the general practitioner, and it seems to me that along this line in our State societies we can present papers that will attract attention to the eye, ear, throat and nose specialist. Let us write papers that will enable the general practitioner to get some information that will help him in the management of special cases of this nature.

Now to the point: There are many people who repeatedly take cold; they catch cold easily. At this stage there may be nothing radically wrong with the nasal cavity, nor with the ear, but they will notice that during that cold the ears will stop up and, after a while, they will come and say: "Every time I get a cold it stops up my ears and I feel as if I were talking into a barrel." These people should be provided with remedies for home use. They should be advised that if they neglect these repeated colds it will lead to incurable ear trouble.

But the point is, how are you going to tell that it will end in sclerosis? I believe that there are cases where there is no pathological condition to the eye and yet there will be a post-nasal catarrh that even we, as specialists, neglect. I have watched a number of these cases and it seems to me they end in sclerosis of the middle ear more than do the cases that have obstruction from hypertrophy or more than cases of atrophic rhinitis. I think it is in these cases of post-nasal trouble that we can get good results with the action of our remedies, particularly the anti-psorics. Early treatment is, however, necessary.

Dr. W. B. Kreider: Has this family that Dr. Lewis mentions a rheumatic tendency? There are cases of sclerosis of the middle ear who have had rheumatism some time in their lives.

Dr. F. Park Lewis: No, sir; I think there are forms in which we find direct hereditary tendency toward a certain characteristic or manifestations of disease. It has been denied that heredity takes such discreet forms. I have seen it so manifested again and again.

Dr. T. M. Stewart: Referring to Dr. Lewis' remarks about the deposit of lime salts in the drum head, and deposits about the middle ear

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bones, as one factor in sclerosis of the middle ear, I wish to say that many ear patients will give evidence of the lime salt crystallization if the urine be examined. Patients of this class often indulge to excess in nitrogenous foods, which is not properly cared for in the system. The extra work thrown upon other organs disturbs nutrition. Excretion of waste is interfered with, and to properly treat these patients demands of us diet directions as well as the giving of remedies, etc.

Dr. E. D. Brooks: The papers and discussion upon this subject remind one of the convention that was held to devise means for resusitating the dead. The prevailing opinion was that prevention was the proper thing. It seems to be the opinion of all present that all that can be done in sclerosis is to prevent it by proper treatment in the early or sclerosing stage.

Dr. J. L. Moffat: I have learned, then, that the homœopathic specialists agree practically with the allopaths that here is a disease that is incurable. I did hope that we would have a list of some of the medicines applicable, with their indications. As I said last year, we specialists have a duty to perform to homœopathy, to do all we can to see if we cannot get better results than oculists and laryngologists who don't treat with homœopathic remedies. I sympathize with the conservative physician who is very careful not to claim cures he cannot demonstrate; very careful about diagnosis, realizing how difficult it is to be sure of an exact diagnosis in these cases—so much so that it may be fair when we have relief by the remedy to actually doubt our diagnosis. But sclerosis elsewhere in the body has been helped by *Plumbum, Zinc phosphide, Phosphorus,* etc. I am satisfied of one thing, that a doctor who tells his patient he cannot cure him, cannot do so; it is then time for the patient to look for another doctor. Dr. H. C. Houghton, some years ago, stated that he had seen a lime deposit in the membrana tympani disappear under the influence of *Calcarea fluorica* (I think); I am speaking from memory.

Shall we go home to state that we have come to the conclusion that real sclerosis of the middle ear is as incurable as sclerosis of the spinal cord? I have a case in mind of locomotor ataxia, confined to the bed, apparently doomed to early death; galvanism, applied daily by his wife, improved him so that he was (later) up and about. Have we nothing but *Kali mur?* Is *Calcarea fluorica* no good? Are not *Sulphur, Zinc, Alum., Plumbum* or *Silicea* of any use in this disease if the symptoms indicate one of them. Must we not, as homœopaths, seek to cover the totality of symptoms, despite the unfavorable prognosus such a diagnosis obliges us to make?

Dr. F. D. W. Bates: Since nobody has benefited a case of sclerosis, I will mention a case that I have benefited, a case that I have on hand at the present time; but am sorry that I cannot report having done so with homœopathic remedies. It is a case of great interest to me because it is one of long standing and has been under the care of other aurists without benefit. The patient was sent to me about one month ago from a town about fifty miles from where I live. It is a true case

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of sclerosis of the middle ear. There are strong bands of adhesion to be seen in both membranes, with calcareous deposits around the handles of the malleus in each ear—though more marked in the left; there is the characteristic paracusis Willisii, and she has had constant tinnitus in both ears for years. The patient is a lady forty years of age. She has not been able to hear a watch tick in the left ear for over ten years, and in the right one about one year before coming to me, and in conversation it was necessary to get pretty close to her and speak quite distinctly.

She was brought to me and my opinion asked. I did not say "I can't do anything for you;" nor did I say that I could benefit her; I told her I could not promise anything; that I might possibly be able to check the trouble and keep it from becoming worse, but I could not promise even that; but did say that I would do the best I could for her if she remained under my care for a while. She staid with me for a month and I treated her every day; treated the throat and nose by making applications and using various sprays and then following with Stephenson's phono-pneumo-massage instrument and ending up with a cornet solo on the phonograph. In the course of two weeks' time the tinnitus began to let up in the right ear, and there would be times when she would not hear the noise for a few seconds in that ear. This became more marked day by day until before the end of one month from the time she came to me the noise had almost entirely ceased and she could hear my watch tick in the right ear. She could hear sounds that she had not heard before, and the hearing in the left ear was also increased for certain sounds—though she could not hear the watch. She will continue under my care, and I hope to be able to report further improvement.

Dr. G. W. McDowell: What was the condition of the Eustachian tube?

Dr. F. D. W. Bates: It was all right.

Dr. G. W. McDowell: How was the bone condition?

Dr. F. D. W. Bates: The bone condition was good.

Dr. H. P. Bellows: I cannot let the opportunity go by without a word or two on this subject which I have studied carefully for many years. There is a difference between a stiff elbow and a stiffening elbow. There is a difference between a corn and the local inflammation which culminates in the formation of a corn. I think that most of the remarks which have been made thus far this afternoon have shown that "sclerosis of the middle ear" is regarded by the speakers as a state of the ear instead of as the name of a disease. Sclerosis should be regarded as a disease; a slowly-developing disease, which does not develop in a day or in a month or in a year. It is a disease, which, according to the latest views of some of the German pathologists, who have made it a close study, is even to be regarded as strictly a disease of the nervous system. It culminates in the formation of these deposits, so dense, so intractible, that when that state is reached, we may well stand aghast in its presence and feel that we cannot prescribe for it any more than we

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can for a corn. The disease is one which is amenable to treatment, however, in its early stages. In my experience, it is more apt to be hereditary than any other disease of the organ of hearing. It may or it may not be closely related to the uric acid diathesis, but, at any rate, it seems to be hereditary. It strikes one ear first almost invariably. We have thus a chance to work. The patient generally comes to us with one ear so far advanced that we can practically do nothing for it. The other has begun to fail. I believe that with sufficient care on our part and sufficient attention on the part of the patient the second ear can be saved and the hearing preserved almost indefinitely. It requires treatment year after year. I have had patients on my hands for fifteen years, patients with one ear practically gone, the other ear reduced to perhaps $^{10}/_{40}$ by the watch test. They can be carried along year after year, treated constantly during the winter seasons; during the summer getting along without treatment and holding their ground. If they have treatment then they may gain a little, but it is possible to get through the summer without treatment. During some winter months once a week is sufficient. Toward spring it requires sometimes two or three treatments a week for two or three months. The general health is always an important factor. An attack of pneumonia, nervous prostration, a severe attack of grip, a severe fever of any kind, will bring down the hearing and it may not be entirely recovered; one cannot always succeed in getting it back to the original limit; but, barring these exceptional conditions of the general health, I believe the remaining good ear can be carried along almost indefinitely. As a means I use local massage of the gentlest description. I believe the use of this local massage is not sufficiently general. I fear it is in danger of being abandoned, because it is being tried too hard. It must be done gently. Some of my patients only get a half-minute treatment, and with very gentle massage at that. I am by no means inclined to hold up the white flag in regard to our homœopathic remedies in this disease. I am willing to say here to Dr. Rhoades that I will be one man to vouch for *Kali muriaticum,* if used early, not after the sclerosis has developed and a bony or chalky deposit has occurred, but early. However, that is not the chief remedy. I have only four remedies to speak of—instead of forty-five! One is *Causticum.* I do not think it has been used very much, but it is often well indicated. I do not know whether it will be of any great service or not, but in the last six months I have given it extensively. Then, there is the stage of sclerosis when the nerve begins to become involved; the later stage where the fork tests reveal implication of the auditory nerve. I think even here our homœopathic remedies, particularly *Strychnia* and *Kali phosphoricum,* are useful. I am not going to stand aghast in the presence of sclerosis of the middle ear. I am going to fight it and I am going to get better results than I have in years past.

Dr. McDowell: I was very glad to hear the remarks of Dr. Bellows on the curability, or possibility, of thwarting sclerosis; but I think there is a difference of opinion among the majority of the members and Dr.

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Bellows on the point of definition. The condition usually called sclerosis, I believe, as you intimated, we consider the completed state, as in your ear, beyond hope; the other I would term in a sclerodizing condition. If you have both ears in that condition, how are you going to describe the state? One ear goes on to an almost complete loss of hearing before the patient applies for treatment. Then, we have well-defined conditions for making a diagnosis in the other ear. But before these absolute conditions are fulfilled I think it is impossible to make a diagnosis of sclerosis until you find your hearing is practically gone, with, perhaps, some slight changes in the membrane and the patulous Eustachian tube and only partially impaired perception for sound by the tuning fork. I think in the sclerodizing condition, as I wrote Dr. Fellows, something may be accomplished by remedies. I am not prepared to haul down the flag in any condition that is still progressing, but when we get to the condition that Dr. Brooks has mentioned, where nothing remains but to bury the patients, figuratively speaking, I do not think remedies are of avail; but, in the early state, if attention is directed to the general condition of the system, massage by prevention of all exciting causes, will improve the catarrhal condition of the middle ear, and undoubtedly prevent the rapid progress of sclerosis, and the hearing may be preserved so long that the patients may die before they are deaf.

Dr. C. G. Fellows: I expressed very little of my personal opinion in this paper. Only thirteen remedies are mentioned more than three times among the seventy-five mentioned. Some are mentioned by our president not otherwise spoken of. I believe that Dr. McDowell has settled the whole question; that when we arrive at the condition of sclerosis that there is practically nothing to be done. The point I wish to make in my paper is, that we have no business as homœopathists today to claim what we cannot do or cannot prove. I have a great many friends in the other school; I got a good deal of my education in the other school, and I want to meet them on a plane of equality. If I claim to cure my patients that are incurable by "moonshine" I make myself liable to false claims. Although we are pessimists in discussing this disease, we have a right to be optimists in others, but we have no right to be pessimistic with the individual patient who comes to us. One man comes to me with sclerosis and it is incurable; it is not my duty to tell him that he can't be cured and allow him to go off to someone else. He will go to men who treat for five dollars a month, or fifty cents, or anything. I have a personal acquaintance who works with these advertising ear specialists. Every morning the doctors are instructed as to treatment, to be given to whomsoever comes in the doors. That is where the hopeless cases go to. Just as sure as we turn them off they go there. It is more honest to get two or three or five dollars and to do the best we can than to turn them off to go to quacks. Although our remedies don't accomplish much and our machines don't, possibly they do more than we think for. All of us have treated cases from one to five years—we believe in holding them where they are and preventing their growing worse.

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Now, as to electricity and massage and all those other things which are not in my paper, I believe they are of value and believe it is very often impossible to tell when a patient has come into a sclerotic condition. I ask my patient to use the telephone and many of them report improvement. They cultivate the hearing in the ear that has gone out of use.

A few years ago some of our doctors would tell patients that suppuration following scarlet fever and diphtheria did not amount to much. They said "when the discharge stops, go to your ear doctor and he will fix you up." That is done away with. Why? Because hundreds of us are teaching that this is wrong and physicians are not saying it any more. By seeing the cases early we prevent the results, formerly so terrible. So many times our former knowledge is proven to be unreliable and newer and better knowledge takes its place. Scientific observation leads to scientific results.

Dr. E. L. Mann: The paper gives an excellent resume of the present status of our knowledge of the means of local treatment of sclerosis of the middle ear, especially valuable in that the doctor has no special line of treatment in which he has the supreme confidence that biases judgment and conclusions.

As aurists we must confess that this disease is our *bete noire,* and the very abundance of the remedial measures advocated is an indication of the lack of general utility of any.

We are better off pathologically than remedially. We know that when the stapes is fixed by bony union into the oval window, or the membrane of the round window is calcareous, little can be done—but is there any way of diagnosing such bony and calcareous conditions other than the microscopic section, for unfortunately after such demonstration has been made the time for relief has past. Is there any way of telling in a given case if improvement will follow treatment or not? After examining a case is there any means of prognosis?

Many of these cases hear better in a noise, or more correctly during vibratory movement, as when riding upon street or railroad cars, and I think that this gives a prognostic hint in a negative way—that is, all cases that have improved hearing during such vibration do not respond favorably to treatment, but when there is no such vibratory improvement the chances of results from treatment are very meagre. Still, in the vast majority of cases one must simply not prognose and treat in the hope that at the expiration of a month's time we will have given After examining a case, is there any means of prognosis?

Acting upon this vibratory improvement Dr. Dundas Grant, of England, assuming that such improvement was due to the special jarring or massage, has treated some cases with galvanism and faradism to the spine, and reports partial success, but all results of new forms of treatment must be taken *cum grano salis*—it is so easy, as the paper says, to become biased in one before and after testing and so hard to eliminate the psycic element in the patient. I recall Dr. Grant testing a case experimentally, and finding 66, heard many inches further than 99, both

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relieved in the same tone—so also Mississippi much further than a word without the sibilants—in fact, we are handicapped in having no accurate means of testing the hearing power. The hearing power for the watch tick bears no constant relation to that for the voice and *vice versa,* and the acumeter is no better. During three months at Politzer's clinic at Vienna I saw him use the acumeter just once, and he its inventor.

Air massage is just now the fad in the treatment of these cases and costly instruments for this purpose are multiplying—lately some for massage through the Eustachian catheter and tube have been put on the market—useful in so far as conditions of the Eustachian tube are concerned, but faulty in producing to and fro motion of the ossicles on account of our inability to fit the catheter accurately and air tightly into the Eustachian orifice—for the exclusion of any communication with the surrounding air is a *sine qua non* in all forms of air massage. In closing let me make a plea for the more frequent use of the Eustachian catheter—if not for treatment, at any rate for diagnosis—it is the only means that we have of finding out definitely the condition of the Eustachian tube and middle ear.

I should like very much to call the doctor a pessimist, attack the validity of his conclusions, show him the error of his ways, and conclude by explaining an original mode of treatment that would cure 75 per cent. of these cases and improve the rest—that would be grand and entertaining. But I can't. I also must stand before you a doubting Thomas.

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A PRACTICAL METHOD OF APPLYING HEAT TO THE TYMPANUM.

BY DAVID A. STRICKLER, M. D.

Denver, Col.

WHEN I announced this subject I had thought to be able to present something new, as well as practical. Since then, however, I find at least one other has preceded me with an instrument involving the same principles and almost identical in construction. I refer to the Vansant Hot Air Apparatus, advertised by Yarnell Surgical Company, of Philadelphia.

The instrument to which I would call your attention is after the pattern of an instrument used by dentists for drying cavities in the teeth. It consists essentially of a heavy brass bulb, with an air chamber so arranged that the air in passing through is forced into contact with the inner surface of the bulb, and of a second chamber for the reception of medicated cotton, through which the air is forced before reaching the heated bulb. One end of the instrument is made to fit the Davidson cut-off, while the other fits the Eustachian catheter. Other attachments are made to fit the nebulizer, and for directing the air in smaller or larger streams.

The bulb is heated in a Bunsen or other flame, and the air drawn from the tank of condensed air or from the nebulizer. It can likewise be used with the double hand bulb, which throws a continuous stream of air. In the latter case any medicament must be placed in the chamber for medicated cotton.

With a little care the amount of heat can be adjusted to the needs of the case under treatment. I have used the method in applying heat to the drum-head in acute congestions and inflammations of the drum-head and drum, and always with marked relief, of pain and discomfort, and it has seemed to me with undoubted benefit in the treatment of the case as well.

In the treatment of acute and chronic suppurative inflammations of the middle ear, after thorough cleansing by the usual methods, it is very pleasant to the patient,—in no instance has the patient failed to express a sense of comfort from its use.

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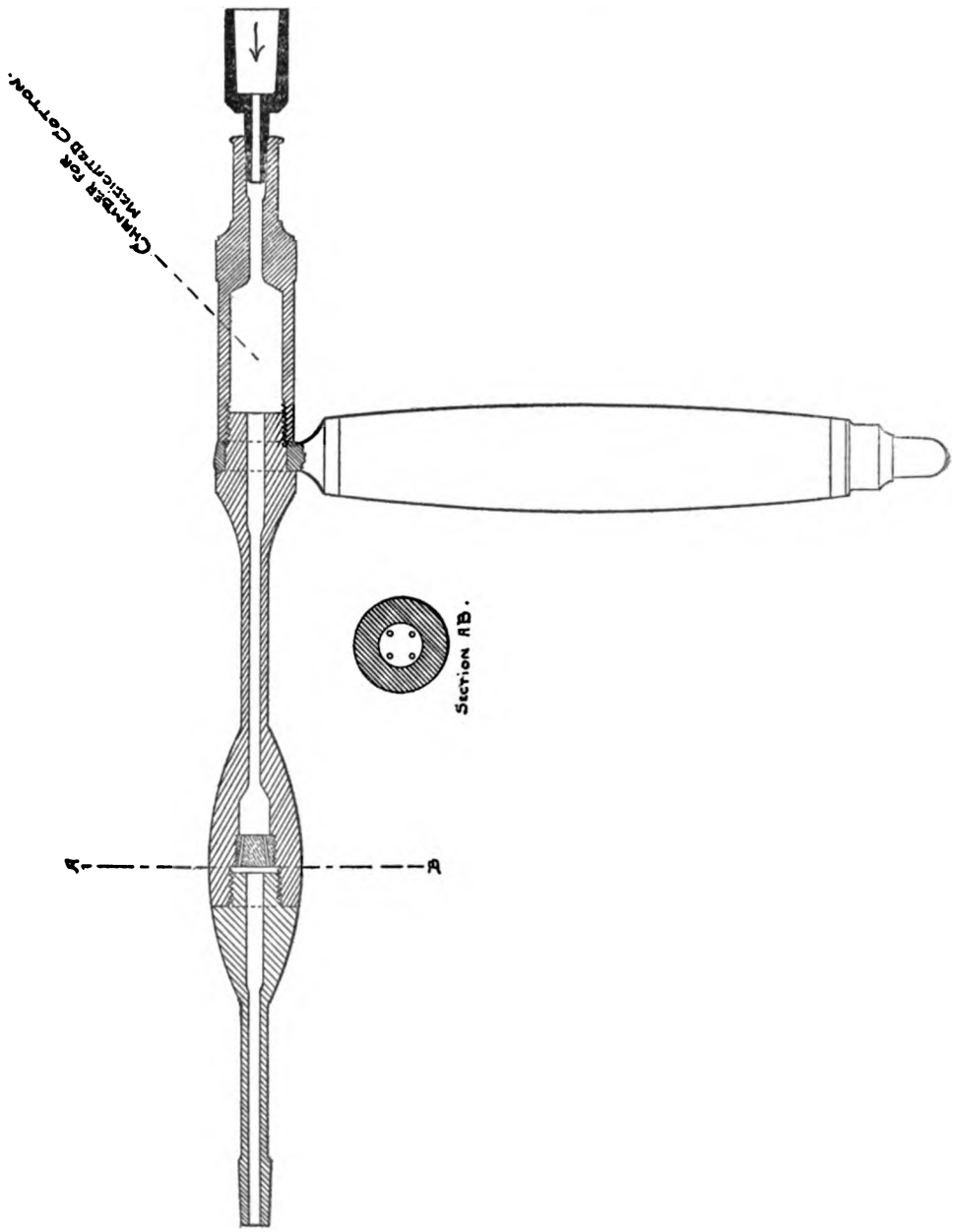

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I thought that the stimulation of heat, together with its drying effect, must have a marked influence in lessening the discharge and in curing the case. I am convinced from its use that this belief was well founded, and that the instrument merits a place in the armamentarium of the aurist.

DISCUSSION.

Dr. J. M. Fawcett: I fear I can add but little of a practical character to Dr. Strickler's paper, as I have had no personal experience in applying heat to the tympanum by this method. However, we can readily see where heated air may be of great benefit in some pathological conditions of the ear. If applied carefully in acute otitis media, it would no doubt relieve the pain and inflammation. Used in the canal it should be valuable in the same condition, also in otitis externa, circumscribed or diffuse, taking the place of and penetrating deeper than the usual application of hot water bottle, salt bag, etc. A distinct advantage would also be obtained by using medicated vapors on the cotton in the chamber for that purpose. We find in otitis media suppurativa dry methods of treatment generally give us the best results, therefore this instrument ought to be of benefit in treating this disease. As to the mechanical construction of the instrument, I have no comment to make, except to say that there should be some way of knowing or regulating at all times the degree of heat that is being used.

Dr. H. W. Woodward: I read with considerable interest the Van Sant article, and he recommends it in tinnitus aurium. I just want to asked whether the doctor got good results in tinnitus aurium?

Dr. Strickler: I have not used it.

Dr. E. L. Mann: I have used the Van Sant instrument with the Eustachian catheter and was surprised to find how slight a degree of heat rendered the silver instrument uncomfortable to the nostril. I was forced to use the hard rubber catheter.

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VIBRATORY MASSAGE IN DISEASES OF THE EYE BY THE INTERMITTING VACUUM PULSATOR.

BY CHARLES LESLIE RUMSEY, A. M., M. D.,

Baltimore, Md.

IN some crude form or other, massage has been used from time immemorial by savage and civilized people. The reason of this is obvious, for almost every one instinctively siezes the place that is the seat of sudden pain and attempts with more or less success to relieve it by rubbing or pressure, or by both together. Massage was extensively patronized by both the Greeks and Romans, from the patricians, the wealthy and the learned down to poor, decrepit, old slaves. It is the act or art of applying intermittent pressure to the accessible tissues of the patient. In whatever manner this manipulation is applied, it furthers the removal of lymph from the parts and relieves the stasis of the blood-vessels, which is the cause of pain by the exudative products into the tissues producing pressure on the nerve filaments. It thus furnishes a gentle vaso-motor stimulus, which quickens the blood circulation to carry off the debris. It acts as a direct trophic stimulus to muscular and sustentacular tissues, and as a general stimulation of sensory nerves it may affect favorably the nutrition of the central nervous system.

In the developed form, therefore, massage constitutes a valuable resource of modern scientific therapeutics. The accomplishment of manual vibration is extremely difficult and often unsatisfactory. The question now of importance is the comparative value of the forms of energy which are used to produce massage to the eye, ear, nose, or throat. The writer's experiences teach him the value of a massage instrument depends upon the regularity and the same intensity of vibration upon the parts to which it is applied at one seance.

The Intermitting Vacuum Pulsator is designed for applying vibratory massage by a succession of intermitting vacuums without compression over the parts treated.

The Pulsator is composed of a pneumatic pump, two valves, a cam wheel, large wheel with handle for hand power, oil cups and a pulley wheel. When the piston rod is drawn backwards a partial vacuum is

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created, and the parts over which the hollow glass (attached to the rubber tubing, leading to instrument) is applied will be drawn in the hollow of the glass. When the piston moves forward, compression is avoided by the air escaping through the valve. When a sudden jerk and release action is desired, adjust the rod valve regulator, so that the rod valve will hit it just at the end of the backward stroke; this will let in the air, breaking the vacuum as suddenly as it was made. There can thus be given to the membrana tympani a massage consisting of a sudden jerk and release action for the breaking up of the adhesions of the drums. To adjust large wheel for hand power, unscrew two screws in front of machine, when it will be pushed back by springs in contact with small wheel on shaft at the rear. Vibratory massage can be applied to the nose and throat.

In applying the Pulsator to the eyes, the most rapid vibrations should be used with the short stroke. The time of seance varies in accordance with the patient and disease. The writer generally begins with two minutes.

Vibratory massage of the eyes opens up a large field for the successful treatment of that class of cases which heretofore has been unsatisfactory both to the physician and patient. It exerts a special influence upon cases hardly reached by the ordinary treatment and coming under no specially named disease. It is applicable to conditions so often described by patients as weak eyes, called asthenopia, which has neither accommodative, muscular, nor retinal causes. There is lacking something to give the eye a comfortable feeling. Massage of the eye relieves this sometimes. It increases the circulation, absorbs any foreign deposits, promotes a healthy activity of the tissues, and stimulates the peripheral ends of the nerves. It acts as a depletive, lessening the tension of the eye; in others as a stimulant, proving thus beneficial when nutrition and absorption are torpid. It acts upon the vaso-motor nerves, exerting a stimulating effect whereby a better contraction of the vessels resulted, though the immediate effect was that of dilatation.

Besides its influence in relieving pain and headache of neuralgic, rheumatic and sometimes of central origin, the most striking results I have obtained were in the relief of muscular asthenopia. When the correction of muscular or refractive defects have not afforded relief, vibratory massage of the eyes has given complete and permanent relief.

In habitual or paroxysmal headache, similar to migraine, one finds indurations or infiltrations in one or more muscles, which have their place of insertion in the head. These infiltrations, the final result of a

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chronic myostitis, make no trouble themselves, but cause severe headache. Massage faithfully applied over these muscles of the head and face, together with the defective eyes, has removed these infiltrations and the headaches arising therefrom.

Massage has been found useful in cases of conjunctivitis in which there seems a hypertrophic thickening of the membrane and the conjunctival and subconjunctival vessels are injected. In scleritis and episcleritis, in which fixed nodules appear in or on the sclerotic coat, often accompanied with severe ciliary neuralgia. Chronic episcleral inflammation leading after long periods to alteration in the tissue of the sclera. It is serviceable in chronic inflammation of the anterior segment of the eye. It removes hindrances to the circulation, by emptying the blood-vessels and lymphatics at the sclero-corneal margin and thus promoting rapid absorption of exudation around them. In one case, disseminate choroiditis, vision was improved from $^{15}/_{200}$ to $^{20}/_{200}$. In various forms of glaucoma, Schenkl found that the good effects of massage were only transitory, the diminution of intra-ocular pressure not lasting more than twenty-four hours. I believe this is an exception in chronic glaucoma, where an iridectomy is seldom advised by me. In one case, the patient had a total loss of vision in the right eye caused most probably by the iridectomy for glaucoma, and was seen, for the first time by me, during the third attack of the left eye, within one year. There was marked diminution in the field of vision with the concomitant symptoms of chronic glaucoma. The daily massage by the Pulsator restored the usual vision to this eye with *Eserine* and *Bryonia.*

In conclusion, I regard massage as an ideal treatment for chronic diseases of the eyes.

DISCUSSION.

Dr. B. S. Stephenson: Now, the secret of all manual massage is slow, regular movements, and, as far as I have done anything in ear massage, I think I have seen better results from the slow and regular movements there. I can't understand how the reverse stroke or the jerk is obtained. If we had the instrument here perhaps we could see that; but I should think there would be dizziness caused by the jerk when applied to the eye. Both papers report the use of the intermitting massage from two to ten minutes. Now, that is longer than I have been able to use it on the ear, unless it was a case of chronic otorrhœa. What experience I have had with massage for the eye has been three cases of chronic glaucoma. In these cases I had the patients use the massage, applying it themselves, and there was slight improvement. They did not go back at any rate and I have had them under observation, one of them about a

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year and a half and the other two from eight to ten months. I have had them use it themselves and to note their feelings and their sensation. In these cases it is certainly helpful, because they had been losing under medicinal treatment which I had been using before.

Dr. H. W. Woodward: I am glad to see so much interest in massage, because I am enthusiastic in this line, particularly in massage of the eye. The doctor's results were very satisfactory, particularly in absorbing those parts or particles in choroiditis and also in that of cataract. I have never been able to produce anything like that by the systems that I have been using. About two years ago I began experimenting with a vibratory motion of a pneumatic rubber membrane over the eye. The results were not very good, but sufficient to give me considerable interest in everything else that has gone on since that time, and lately I have used Dr. Houghton's device, the pump that he uses for the ear in getting the motion on the closed eyelids; but what I have been mostly interested in is the Dion system, which I described several months ago in the Journal of Ophthalmology, Otology and Laryngology. It is a system of direct alternating pressure and relaxation. The motion is produced by two cylinders, moving backward and forward. I stated that the pressure was in line with the axis of vision, but that was not quite true. It is just below the centre of the pupil. I do not know why we use it there, except from the results we get. It is wonderful how much pressure an eye can stand when it is put just in this one place. I have not been able to produce the results in choroiditis, but in refractive errors I have had the most experience, and this massage does improve vision and allow people to get along without glasses. I have about fourteen patients under treatment at the present time, and in 90 per cent. of the patients there has been improvement in vision, undoubtedly, and I have taken off glasses in about 75 per cent. of the patients treated so far.

Dr. C. G. Fellows: Describe your machine, will you?

Dr. H. W. Woodward: It has two cylinders in a trial frame, fitted right on the nose, with arms back of the ears, and these cylinders move backward and forward by a screw, and there is a little device for showing the amount of pressure.

Dr. C. G. Fellows: Is it run by hand or electricity?

Dr. H. W. Woodward: By hand; just a slow motion, about 60 the minute.

Secretary: Can't you bring it down, doctor?

Dr. H. W. Woodward: Yes; I have some of the eye-pieces here which I will pass around.

Dr. G. A. Suffa: What is the age of the patients?

Dr. H. W. Woodward: All ages. This is an ordinary eye-piece, used by Mr. Dion. (Exhibiting the part.)

Dr. J. N. Anderson: What was the condition under which you administered this flat eye-piece?

Dr. H. W. Woodward: That is for a myopic eye. Mr. Dion began his experiments in treating myopia, endeavoring to reduce the anterior posterior diameters, and by this pressure backward and forward he

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accomplished this. In treating a number of people he found that he got good results in other refractive errors as well, so he has used it in quite a number of other conditions.

Dr. C. J. Swan: Does he push the cylinders in with the fingers?

Dr. H. W. Woodward: No; by a little screw. Here is an eye-piece for astigmatism, hyperopic astigmatism, used in a case of a boy nine years of age, having about two dioptres, axis 135° and vision $^{5}/_{18}$. After about thirty treatments his vision is $^{5}/_{5}$.

Dr. C. G. Fellows: Without glasses?

Dr. H. W. Woodward: Without glasses he sees normal at five meters. I have two cases of choroiditis in which, with the exception of a slight improvement of vision, I have been unable to get any result worth reporting.

Dr. C. L. Rumsey: What is the difference between the hyperopic and myopic application of the massage?

Dr. H. W. Woodward: In the myopic it is a flat pressure over the line of vision. The hyperopic is a circumference pressure in the ciliary region. The latter is with the idea of letting the axis of vision come forward.

Question: In this case of astigmia, did you make any measurements with the keratometer?

Dr. H. W. Woodward: I measured it by retinoscopy.

Question: And you measured it afterwards?

Dr. H. W. Woodward: No, I have not, as I do not consider the patient cured yet. The vision for near work is not yet normal.

Dr. C. G. Fellows: What have you done in myopia?

Dr. H. W. Woodward: I have improved a number of cases.

Dr. C. G. Fellows: Have you had cases of fifteen and twenty dioptrics?

Dr. H. W. Woodward: In myopia of about four, five and six dioptrics the best results have been obtained. There is little discomfort and no pain in the use of the instrument. It is remarkable when the instrument is placed right how much pressure can be used without discomfort. I will bring the instrument for exhibition.

Dr. G. W. Haywood: Dr. Woodward's illustration of the instrument reminds me of a circular that I wrote to New York for which has been advertised for a good many months in nearly all of the popular magazines, Harper's, Munsey's, McClure's and Cosmopolitan, an apparatus or machine for curing eye troubles. I sent and got a descriptive circular. They claim to send out testimonials from physicians and patients treated, that, after a few days' or weeks' treatment, they do away with the glasses, both for hyperopia, myopia, astigmia and presbyopia. The instrument sells for ten dollars. I will take great pleasure when I get home in looking up this circular. It is evidently a massage treatment, and from the description it does work very similar to Dr. Woodward's instrument.

Dr. W. R. King: I did not intend to discuss this paper; in fact, I did not hear all of the paper; but the subject of massage, as it affects

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vision, has had added interest to me of late, inasmuch as I have been experimenting a little with the Wappler machine, not altogether on original lines. Some months ago I was invited by Dr. Gary, of Baltimore, to look at a machine he had, something in the line of massage for the eye, and having had some experience with Dr. Gary's vibrometer, in his experiments in the line of massage of the organ of hearing, I made an appointment to meet the doctor to investigate the instrument. The instrument then was in a rather crude form.

I had seen the Wappler machine before and could not see much practical difference, except that the Wappler machine seemed more mechanically perfect and was a neater machine. Both instruments accomplished the same thing. You got pressure straight, or alternate pressure and suction, or direct suction. I began to experiment with the Wappler machine by using it upon the eye. Dr. Gary claimed that he had some excellent results in cases of choroiditis, of vitreous opacities, of incipient cataract, and of various intra-ocular lesions, but I had no opportunity to use it on any of these cases. My experience has been more in the application of massage by this apparatus upon the ocular muscle in heterophoria. I have had unquestionably excellent results in relieving the asthenopia immediately and for a considerable time. Patients were very comfortable immediately after the use of the instrument, and I have had marked permanent improvement in cases where I did not consider there was sufficient hyperphoria to require an operation and in the cases of others who declined operation. I hope if I can continue my experiments long enough to get a group of cases that are characteristic and unquestioned next year to report something in this line.

I began to use this method of massage with vocalists. I happen to treat many vocalists who occasionally overdo them about like that (indicating). He produced there eventually a cataract in both eyes. He passed out of my observation. It was certainly a very interesting case along this line. This question of massage brings back again to us the non-surgical treatment of immature cataract. If the statements of Dr. Rumsey are correct, that it will take up exudates, that it improves nutrition, why can't we reason that it ought to be good, if we know how to apply it in cases of immature cataract? Now, in a great many cases, possibly, the immediate cause of opacity is some local interference with the nutrition of the lens, not going into what the remote causes are. If we have in massage something that will stimulate nutrition, isn't it fairly reasonable to suppose that in properly selected cases it ought to be of benefit in immature cataract? Going back to the proposition I made, in speaking of Dr. James' paper, there are cases of cataract that have been observed after a period of time to have improved. That shows the possibility of returning to a better condition. What has caused it? Possibly putting on glasses, in one case; in another, improving the general condition of the patient. Now, I throw this out as a suggestion. It is a field that I have been working at a number of years, and some day I hope to present to this Society something that will have in it some elements of accuracy. I have been using massage in immature

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cataracts for about five years, and I hope in another year or two to be able to make some reports with accurate tests of vision and with diagrams as to the condition of lenses and to present them to this Society. I have also used galvanism with the self-retaining head-posts that I have shown out in the other room, but I haven't any series of cases. I have used the massage, I have used the steaming process, I have used the galvanism and I can merely throw out suggestions. I would like every man to work along this line, because I so far am strongly convinced that we have had results more favorable than would have occurred if the cases had been left entirely to Nature. If we understand in any sense the pathology of cataracts, I do believe certain conditions of immature cataracts can be improved.

Dr. C. G. Fellows: I am very much interested in this general subject. If there is one-tenth of the truth when we come down to the bottom of this subject that is hinted at here in fifteen minutes, it is worth coming a thousand miles for. Now, these men who have written these papers are honest. I believe they are going along the proper lines, and, as Dr. King suggested, he is going to give us something next year in which we are going to have final results, but if there is something for application along this line let us get the guide posts now, so that we can work on the same line. I have not used any of these machines. I must have them. We often buy new instruments and then throw them away and buy something newer and all in the line of progress. For ten years I have been using massage applied to the eye part of the time with boric acid and sometimes with calomel and various solutions. Normal salt solution or boric acid in powder or solution are all good. Patients coming in with asthenopia are relieved by massage, by static electricity, by Faradism and by galvanism. At the present time I am using static electricity with a spray from the point of an electrode; with the static spray from a single point I get relief that the doctor gets from massage; I get it from the finger through the closed lid; I get it from Faradism. Do we get it from any one or all of them? I believe that in an experience meeting like this we ought to get the facts. Many of these cases are not of cataract or hyperphoria, but the nondescript cases where there is nothing particular that you can put your finger on—no positive disease. The patients are tired out and want relief, and if we get it from massage or Dr. Gary's machine or the Wappler machine or the static machine that is what we are after.

Dr. C. L. Rumsey: In closing the discussion, please remember my paper refers to eye massage.

The instrument is an invention of Dr. Gary, of Baltimore, who has given so much attention to the massage of the ear. Were the instrument on exhibition, as I thought it would be, I could demonstrate its workings. It is impossible to have an exact understanding of the instrument unless you saw it.

In answer to questions about its application to the ear, my experience teaches me the slow vibration is much more useful in ear work. It is the sudden jerk and release action given to the drum by this instru-

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ment that Dr. Gary claims is particularly valuable, and not found on any other ear instrument. There is a sudden jerk given to the drum, accompanied by a release action which allows the drum to come back by its own elasticity. If there is no dizziness, vertigo and like symptoms, the seance is generally ten minutes.

In eye work, it is the rapidity of the vibration you desire. The more rapid the vibration the greater the success in the treatment. The stroke wants to be short. The seance varies from two to five minutes.

In cataracts I have obtained no results.

There comes a marked relief in all cases of muscular asthenopia for which the Pulsator is most useful. I recall one case where there was an abduction of 8° and adduction of 10°.

I advanced the internal recti muscles to find perfect orthophoria with Maddox rod test. Yet the patient could not use the eyes any time with satisfaction.

Massaging the eyes by the Pulsator, the patient is now able to use the eyes with comfort and satisfaction.

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A NEW FORM OF TREATMENT IN CHRONIC EYE DISEASES—VIBRATORY MASSAGE.

BY WM. F. REILLY, M. D.,

Covington, Ky.

I WANT to call your attention to a new method of treating chronic eye diseases. It is by vibratory massage. The eye-ball as a whole is caused to vibrate in its socket, in a painless, harmless and efficient manner, and from results already obtained has proven of the greatest value in all chronic diseases of that organ, especially of the intra-ocular variety.

You are all aware of the difficulty of treating those troubles successfully, such a chronic glaucoma, chronic choroiditis, embolism of the retinal arteries, etc., yet in these cases it has been curative in every instance when tried, and so powerful are its beneficial effects that pronounced improvement is at once apparent after not more than three treatments. The eye has never before by any means been vibrated and this method is entirely new. It was originated by Dr. Henry F. Garey, of Baltimore, Maryland, the same as most of you know, who first called the attention of the medical profession to the value of vibratory massage in aural diseases in 1892, and which is now used by most all physicians who treat those diseases. A year ago Dr. Garey commenced his experiments on this line, and I was made acquainted with them while on a visit there. I have made visits to Baltimore three times since, and from cases seen treated by him, besides a little of my own experience, have been impressed with its wonderful effectiveness.

The method, as I before stated, is a vibratory massage of the eye-ball and is brought about in the following manner: A machine which Dr. Garey calls the Intermitting Vacuum Pulsator is constructed in such a manner as to produce a succession of intermitting vacuums without a corresponding compression over the parts treated, and for this purpose is composed of a pneumatic pump, an escape valve to avoid compression and a break valve to relieve the vacuum at the end of each stroke. The speed can be regulated at will and the power adjusted at any strength desired. It is also used in aural diseases, and in these cases the sudden jerk and relief effect, which it has by the action of the

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two valves, should make it more effectual than any other method in breaking up adhesions of the membrana tympani.

In treating the eye hollow glass cups, which are connected with the machine by rubber tubing, are placed over the eyes, and treatment given from 2 to 10 minutes at each sitting. The immediate effect is a slight sensation of cloudiness, followed by a clear and refreshed feeling, and in most cases a temporary improvement of vision of at least 10 per cent., which increases in amount and permanency after each application.

My own individual experience has been very limited up to this time, but can relate its effects on three cases, which I think will interest you, and of one other taken from the case-book of Dr. Garey.

Case One.—Mrs. G. D. first called on me December 3d, 1899, complaining of gradual loss of vision. She was brought by her daughter, being unable to see well enough to come alone. Her age was given at fifty-six years; she appeared otherwise healthy, and had no history of syphilitic taint. She said that it seemed that she was looking through a thick fog, and that her sight first became impaired about two years before and had been treated by several specialists without any apparent benefit. I found that she was suffering with chronic choroiditis, and vision in right eye $^{8}/_{200}$, in the left $^{14}/_{200}$. Her eyes seemed to improve from the start; but at different stages of the treatment would stand still for a time; but after thirty applications (three times a week), the fog entirely disappeared and vision in R. E. $^{20}/_{40}$, L. E. $^{20}/_{60}$.

Case Two.—Mr. H. R. consulted me January 9th, 1900, with a case of episcleritis of right eye, which he said had commenced about ten weeks prior to his visit to me, and had been under treatment continuously during that time without being benefited. The pain in the eye was very severe, causing him to awake at night in his sleep. He was treated every day for twelve days, the application lasting five minutes; the pain and inflammation got less after each treatment, when he was discharged cured.

Case Three.—Dr. E. H., an old school physician, age fifty-eight years, retired from practice on account of failing sight. Was examined by eminent oculists, both in Cincinnati and Chicago, who pronounced his trouble diabetic cataract in both eyes. This patient's vision was R. E. $^{20}/_{100}$, L. E. $^{20}/_{80}$. After five weeks' treatment, R. E. $^{20}/_{40}$, L. E. $^{20}/_{50}$.

Among the remarkable effects produced by this method I will mention the case I saw at Dr. Garey's office.

Case Four.—Mr. J. L. W. had lost the sight of the right eye three years previous to October 2d, 1899, from chronic glaucoma, and the

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field of vision had so contracted (on the nasal side) in the left eye that central vision was beginning to be encroached upon, and it was with great difficulty he could find his way on the street. I saw and examined this patient three months after, and found that the field of vision was then very nearly normal in extent, and he had returned to his position as book-keeper, which before he had been compelled to give up. The treatment consisted in a daily application of vibratory massage with the Pulsator of ten minutes each, and improvement was apparent at the start. This man was sixty years of age.

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SOME OBSERVATIONS ON MULTIPLE SCLEROTOMY IN GLAUCOMA AS PRACTICED BY DR. GALEZOWSKI.

BY JOHN H. PAYNE, M. D.,

Boston, Mass.

ANY form of operation that will effect a speedy and certain reduction in the tension of a glaucomatous eye without mutilation is to be desired, and that is exactly what is claimed by Dr. Galezowski for his multiple sclerotomy. My personal experience since I began its use in the early fall of last year is confined to eleven cases, but the results have been so satisfactory in all of them that I venture to comment on them here, hoping that those who have had a more extended experience may consent to discuss this subject for our mutual advantage. In this operation there is no new principle involved, but merely a more satisfactory application of the old idea of sclerotomy, by which the results that were aimed at by the old method have become more sure of successful issue. For the benefit of those who may not be familiar with this method I will describe it in brief. By the aid of a spear-shaped knife, curved on the flat, with a cutting edge on each side, and its widest diameter of 4 mm. at the middle of the knife before it begins to slope off to the shank, an incision is started in the sclera some 4 mm. from the sclero-corneal junction, and extended through the canal of Schlemm and the spaces of Fontana directly into the anterior chamber. The knife is thrust forward until its widest part has engaged in the external scleral wound, and is then withdrawn. This incision is repeated directly opposite the insertion of the four recti muscles and later, if it again needs repetition, intermediate points are usually chosen, tho' this is not an absolute necessity. In a majority of cases the first four incisions are sufficient. I do not find mention of this operation in any of the latest text-books that I have at my command, nor have I seen it quoted in any of the periodicals on ophthalmological subjects, yet, it seems to me, in the light of personal experience, to possess distinct advantages over old methods. These advantages, as they group themselves in my mind, are as follows:—

1st. Its comparative freedom from danger of injury to the lens.

2d. Its greater certainty of opening the canal of Schlemm and spaces

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of Fontana, as, by its aid, the incision can be started much farther back in the sclera than by the old method.

3d. Its possibility of frequent repetition.

4th. Its freedom from after-complications, such as prolapse of the iris and staphylomatous bulging.

5th. Its multiple character, by which if one incision fails, the other may succeed.

The knife devised and used by Galezowski I have described. It seems to answer its purpose well, except in cases of great prominence of the nasal bridge, in which case I have found a narrow angular keratome, such as is usually described, I think, as Agnew's, of great convenience. Indeed, I have of late formed the habit of using this in all the incisions in preference to that of Galezowski.

Now as to results. My cases represented various types of the disease and some complications. None of them could be classified as "glaucoma simplex" in the full acceptance of the term, though all of them, with but three exceptions, were sub-acute. Five of these were complicated by extensive posterior synechiæ and plastic exudate nearly closing the pupils, and three by cataract (one of these having both synechiæ and cataract), and were operated on with the expectation of reducing the tension only, and arresting the destructive progress of the disease. These, of course, did not get a restoration of vision, and did not expect it. Of my remaining three cases, two were successes in restoring of useful vision, and the other has been greatly improved, and, at the date of this writing, is apparently making further progress. This last case had been maltreated by a general practitioner for some two weeks by a mydriatic because of a mistake in diagnosis, and the vision had been reduced to a bare perception of a strong point of light at one foot from the temporal side. She is now able to recognize objects at times at six feet, though her vision is still variable The other two successful cases have experienced a full restoration of vision, even to ordinary Jaeger tests for reading, from a reduction of vision to discernment of very dim outlines only in a very strong light.

Her vision had improved somewhat, so that she was able to discern the presence of objects across the room. She was able to tell the food at the dinner-table; then her progress seemed to cease. The eye remained somewhat congested in the ciliary region, although I could not detect any rise in the tension. It seemed quite normal after the first operation, yet I induced her to have a second from the fact that her vision would cloud up at times. She was discharged from the hospital

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a week ago. I have not seen her since, although I had hoped to before coming here. I received a note from her daughter just the day before coming away, saying her mother was greatly pleased with the second operation, and that her vision had widened very greatly and she was much gratified at it, although I cannot speak from personal observation.

In all these cases the plus tension was entirely removed, and with two exceptions by one operation.

The progress of all of these cases after operation has been peculiar and interesting. Immediately following the operation the tension was greatly reduced, and remained so for some 24 to 48 hours; then there followed a gradual tightening of the tissues and a decided return of the plus tension that seemed to reach its limit in about a week or ten days, then a more rapid decline, until at the end of two weeks a normal or subnormal tension was developed, followed by a slow clearing up of the vision. I have explained this to myself by the theory of a temporary closure of the wounds by inflammatory reaction following the incision, and later by the gradual subsidence of the same. These cases have been followed by me with great interest, and the query naturally arises, Have we in this method of Galezowski an operation for sub-acute glaucoma superior to any other now in use?

DISCUSSION.

Dr. A. B. Norton: I wish to thank Dr. Payne for calling my attention to Galezowski's method of operating for glaucoma, as I must admit that it is new to me. I have been very much interested in this paper, and to get further light upon the subject I made a search through the *Archives of Ophthalmology* and the *Annals of Ophthalmology* for the last four years, and like Dr. Payne was unable to find any reference to it. I shall be glad to learn from him where such information can be acquired.

I have practiced simple sclerotomy more or less frequently for quite a number of years. In some cases the results have been eminently satisfactory, in others it has failed and a subsequent iridectomy has relieved. In still other cases neither repeated sclerotomies or iridectomies have been able to check the disease.

I have used for the last three years a knife somewhat similar to the one described by Dr. Payne, shoped like the ordinary keratome, except that it is split up the centre, so as to leave a narrow bridge of the sclera at the centre of the incision. This knife was devised by one of our corresponding members, Dr. Parenteau, of Paris, and can now be had of Tiemann & Co., New York.

There is one point that occurs to me in the operation, and that is the difficulty of making four different incisions in the eye at the same sitting on account of the escape of the aqueous, with the resulting lack of

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tension in the eye, and in the last ones the danger of wounding the iris and lens, which are brought, from the escape of the aqueous, so closely in contact with the cornea.

The results in Dr. Payne's cases have been everything that could be desired, and I believe to be due to the multiple scleral scars, which permit of filtration, and in this way maintain the normal balance between secretion and excretion.

Perhaps it may not be digressing too much from the subject to refer to what might be called the latest operation for glaucoma, which has been so much written about during the last two years. I refer to resection of the cervical sympathetic. Quite a large number of favorable reports have been made upon this operation. Authorities generally speak of it as a simple and safe operation, but in the last number of the *Journal of Eye, Ear and Throat Diseases* Valude, of Paris, says that out of four patients upon whom he had seen the operation performed two died. If, therefore, there is danger to life in this operation it places a grave responsibility upon the physician to advise it in a disease like glaucoma, which does not in any way affect the life of the patient.

The very general success in relieving the tension, as so far reported, serves, however, to direct our attention to the sympathetic as a *cause* of this disease. Valude recommends in all cases previous to resection, galvanization and of high intensity of the cervical sympathetic. He reports six cases, in all of which the glaucoma was arrested and vision surprisingly improved, and refers to six other cases under the care of Dr. Allard which gave equally favorable results. It seems, therefore, that we have in galvanization, of high intensity, of the cervical sympathetic a most valuable addition to our methods of treatment of glaucoma.

Gould also reports flattering results from correction of eye-strain and massage of the eye in glaucoma.

Dr. Wells: I can give a little detail of one of the cases that Dr. Payne reported, being a case that I took to him for consultation—a negro laundress, aged twenty-five years. The history of the case was that for a number of years she had had what we might call an "irritable eye." It was quite congested in the ciliary region. I could get no history, except that these attacks were always very painful. I found tension slightly increased and, as a diagnostic measure, I instilled cocaine, finding a nearly complete posterior synechiæ. The cornea was so hazy that it was difficult to get any view beyond the iris, and the case went on. I saw it first in November, and in two weeks it came to me again with a tension of plus one. I then instilled pilocarpin four times a day. On December 1st the case went to the Homœopathic Hospital and Dr. Payne operated on it the next day, making a multiple sclerotomy. The tension was immediately reduced, but on the second day the tension was again about plus one. On the third day the second operation was done; three more incisions were made, I believe, and the case discharged in about a week with tension normal. I saw this case a month after that. There had been no recurrence of inflammation or pain; the tension was

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normal and vision increased from fingers at six inches to fingers at three feet. There were no uncomfortable symptoms whatever.

Dr. F. Park Lewis: I have not heard anything about this operation, which strikes me as a particularly good one, especially in cases where there might be a hæmorrhagic tendency. I would ask Dr. Payne how the four sclerotomies can be made at one seance without the aqueous escaping.

Question: Dr. Payne, will you repeat the method of your operation? Where is this puncture? I did not quite catch it.

Dr. J. H. Payne: The puncture is started in the sclerotic, some four millimeters from the sclero-corneal junction.

Question: Any special part?

Dr. J. H. Payne: Four millimeters from the junction, and opposite the insertion of the recti muscles. These incisions are passed forward. They are made so that the knife will pass as nearly as possible between the sclerotic and the choroid until the anterior chamber of the eye is reached. It has been estimated that the progress of the knife in that way will force an opening through the canal of Schlemm and space of Fontana. By locating the first punctures at these points it leaves intermediate points for a secondary operation. I find no difficulty with the aqueous. It does not escape if the incisions are carefully made. This puncture is carried forward obliquely, underneath the sclerotic, and the knife is thrust in only to the widest extent of the blade, then withdrawn. If it is withdrawn slowly, depressing the handle of the knife so that its point comes in contact with the posterior surface of the cornea, the wound closes down over the knife and there is very little loss of aqueous. In none of these cases have I had any difficulty in completing four incisions, except in one in which there was some hæmorrhage from the conjunctiva. The fixation forceps had broken away and the conjunctiva had been considerably congested. I made three incisions in that case. There is no mutilation of the eye. The patient is out of the hospital within two weeks, and while there I keep him under observation to determine the tension, which seems to rise and fall until there comes a permanent reduction and gradual restoration of vision. This operation is a new thing to me. I believe that Dr. Bissell has visited these clinics of Galezowski, and I am very much in hopes that he has seen this operation and will give me some points. My experience dates only from last October. It was with the object of exciting some discussion that I presented the paper.

Dr. J. L. Moffat: Do you put on an ice-bag?

Dr. J. H. Payne: No, I do not; simply put on a bandage and keep it wet with cold water, but not necessarily ice. I give *Aconite.* The punctured wound would indicate *Aconite,* and it limits reaction.

About the split keratome. I have seen that used. The bridge of sclerotic left after the operation with the knife is very small, and the result is you get a staphylomatous bulging at the wounds, and are apt to get later a dribbling away of aqueous and a prolapse of the iris. In this new operation the incisions are widely separated and smaller. I

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have seen some very poor results from this split keratome and I consider this new operation superior.

Dr. J. N. Anderson: Do you use a local anæsthetic?

Dr. J. H. Payne: No; I use a general anæsthetic.

Dr. J. N. Anderson: Why do you use this method in preference to iridectomy?

Dr. J. H. Payne: Well, as I have stated here, there is no mutilation of the eye. Then, again, one can start the incisions farther back in the sclerotic. I believe the knife enters the anterior chamber with more ease. Then, again, the incisions are small; you can have four of them and so have a chance, if one fails, that the other may succeed. One can repeat this operation indefinitely. I have seen it repeated by Galezowski a number of times, even returning to the location of the first incision. Finally, if this method fails to relieve, one can resort to iridectomy, as the iris has been in no way mutilated.

Dr. C. G. Fellows: I am very glad to get the history more elaborately for two or three reasons. I have seen Dr. Galezowski perform this operation and a good many others with a good deal of pleasure and interest. I have followed him in many methods, but have not tried this special operation. I have been waiting for some one else to take the lead. I am glad to hear that Dr. Payne has had such success. A great many of us do things in our clinics that we don't do in private, and that is the excuse for a great many foreign operators attempting new and untried operations, but I have no doubt that Dr. Payne has done what the rest of us have done and gone behind the scenes in Dr. Galezowski's hospital and seen a great many things that are not published. I am very glad to see an American operator doing them and reporting the results. I have seen a good many bold things Galezowski has done in opening up the sclera for the detachment of the retina, and I consider this one of the bold things, but I never attempted it. I got the knife and brought it home with me.

Dr. B. W. James: This method comes the nearest to a new operation I saw performed in Liverpool in 1881. I was looking through the European hospitals for new methods and quicker and better ones, and I came across an operation which probably is quite analagous to this, which I adopted for a time. I think it was some eleven years that I operated after this method. It was the operation of cyclotomy, by which the knife passed directly through the cornea and iris and severed the ciliary muscle and its ligament. It was claimed at the time I first witnessed the operation that it at once relieved the tension. The cases that I operated had the tension immediately relieved. The operation left no scar and there was no loss of iris. Down through the iris and ciliary body you had to go very cautiously and with a very steady hand. In the last case I operated, however, when vision in one eye was gone and in the other very nearly gone, I concluded that I would operate on both eyes at the same time. The result proved disastrous, as the good eye suppurated; but the other eye got well and I had a completely blind case as the outcome. I said to myself, possibly as this operation was not a

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standard one in this country I had better not experiment on an operation for using which I would not be upheld by the profession at large, and probably by but few of either our school or the other. I did some eleven cases, and the eleventh one was the unfortunate one—why it was I do not know Whether the knife had some little septic matter upon it or not I do not know—I was specially careful as I thought. It discouraged me to think that the good eye should suppurate. The objective result was obtained, however, the eyes being both softened immediately after the operation.

Dr. J. N. Anderson: I would like to ask whether Dr. Payne has had any experience with massage of the eye in cases of glaucoma? I have seen it recommended in some journals?

Dr. J. H. Payne: In reply to Dr. Anderson's question I will say that I have had no extended experience, but that we had in the city of Boston at one time a blind physician who made a specialty of massage; and could do many things by massage that others could not do. I submitted several cases to him of glaucoma, but had no beneficial results. That is all the experience I have had.

Now, in this operation of multiple sclerotomy I would make some suggestions about the knife to be used. I prefer on the whole Agnew's bent keratome. I think the blade should have a slight curve to it, just as Dr. Galezowski's instrument has, so as to avoid the possibility of touching the lens in withdrawing it from the eye. In withdrawing it the natural tendency would be to swing the point down and it might brush against the lens and produce a traumatic cataract.

I do not think of anything else, except this: I am not talking Dr. Galezowski's operation for his sake; but I am giving the cases as they occurred in my own practice. His operation I do not think appears in any text-book, but he has written a little monograph on the subject. I saw the operation first in his clinic eight years ago, and some four or five years afterward he sent me this monograph—the result of his cases. It is in French, and I do not think it has appeared in this country. I intended, however, today to give the results of my own experience, leaving his results out of the question.

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THE TREATMENT OF PURULENT CONJUNCTIVITIS BY CONTINUOUS IRRIGATION.

BY GEORGE H. TALBOT, M. D.,

Newton, Mass.

IN the greater number of cases of conjunctivitis, cold in the first stage is the essential. The methods of application of this agent are tedious and unsatisfactory. To obviate this I have had constructed for me a little device, by means of which, either heat or cold can be continuously applied, by means of a fountain syringe, for any length of time.

The device, which, for the want of a better name, I have called an eye-bag, consists of an oval shaped piece of vulcanite about one and one-half inches long, one inch wide and one-fourth of an inch thick, with a groove in the edge, to which a piece of rubber tissue can be fastened by a silk thread, forming when filled with water a bag-like protuberance on one side, which readily adapts itself to the contour of the eye. This is held in close contact with the eye by a band, fastened firmly about the head. There is an inlet and an outlet for the water and a continuous stream can flow for hours. The heat or cold is applied directly to the seat of the trouble, and there only. The height of the syringe determines the rate of flow; six inches or a foot is sufficient, and at this height it will be a long time in emptying. The water can, of course, be kept at any desired temperature.

On the first appearance of conjunctivitis this bag is applied and the syringe filled with cold water and the cold continued for half an hour or longer. This is repeated several times during the day, until the discharge becomes profuse, when I clean it as thoroughly as possible with warm water and proceed to irrigate. For this purpose I resorted to the glass eye electrode. The edges were ground and a rubber tube one-quarter of an inch in diameter was attached by cement to the edge, completely encircling it. This, when applied to the eye, fits pretty accurately and is practically water-tight. At the top two tubes are inserted in a rubber stopper; an inlet and an outlet. This is now applied to the eye and held in place by a band about the head and a fountain syringe attached to one of the tubes and a short rubber tube attached to the other serves as an overflow.

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The bag is filled with a solution of bichloride of mercury $^1/_{10000}$ and then elevated only enough to allow the solution to flow slowly into the cup. The eyelids will involuntarily close. To prevent this a speculum was constructed, by means of which the lids are separated about a quarter of an inch, and at the same time raised slightly from the cornea. The solution thoroughly washes out every bit of discharge, and reaching the entire conjunctival surface, by its antiseptic and germicidal properties, destroys the bacilli constantly generating. There is no pressure on the cornea by the speculum, as it rests on the orbital edge, and with ordinary care there can be no injury to it.

As the acute stage subsides, the cold is discontinued, but the irrigation continues for half an hour at a time for four or five times during the twenty-four hours. Once during the day the lids are carefully dried and painted with a 2 per cent. solution of protargol. This treatment, together with the appropriate internal medication, will cut short an acute attack in a wonderfully short time.

In the gonorrhœal form I begin with the continuous irrigation of bichloride $^1/_{10000}$ for a few minutes to clear away all discharge, then after cocainizing the lids they are carefully dried with absorbent cotton and painted with a solution of nitrate of silver, 20 grains to the ounce, the excess wiped off and the cold applied for a varying length of time, usually about thirty minutes. The irrigation follows this for about the same length of time. As the gonococcus develops in the sub-layer of the epithelium there is an infiltration of leucocytes into the superficial layer of the entire conjunctiva and the micro-organisms are found in or on these leucocytes and also free. The object of local treatment is to destroy or carry off these organisms as they develop, and as their development is rapid this is not readily done by the ordinary means of cleaning the eye, as its structure is such as to prevent ready access to the entire conjunctival surface.

By means of this irrigating apparatus the entire conjunctival surface can be kept clean. The integrity of the cornea can be readily noted and the cold discontinued at any time. If there is any irritation of the external surface of the lids from the continuous cold an application of borated vaseline will remedy it.

This treatment will certainly cut short an attack of gonorrhœal conjunctivitis.

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DISCUSSION.

Dr. Keeler, M. D.: No doubt exists in my mind that some method of continuous irrigation is essential to the rapid and thorough cure of any form of conjunctivitis associated with a profuse discharge.

Surgical cleanliness is all that is needed to cure purulent conjunctivitis. How to obtain this has been the problem. It is self-evident that if any of the purulent material is allowed to remain that the disease is sure to continue.

Last June I had the pleasure of presenting before this Society an instrument devised for the purpose of "overcoming the evident difficulty attending the treatment of purulent ophthalmia." Quoting from the paper offered at that time, I will say that "it consists of a hollow lid retractor made of hard rubber, having along its free surface three rows of minute openings communicating with the main canal inside, one directing its spray upward, one downward, and one inward."

The instrument described by Dr. Talbot seems to be a most excellent one, as it offers to the oculist the means of applying, as I understand it, either continuous hot or cold solutions to the eye. A method such as this is infinitely superior to the old method of everting the swollen eyelid, and endeavoring by means of a bit of cotton to wipe off the discharge.

As to the relative merits of Dr. Talbot's instrument and my own I have nothing to offer, not having been able to see or use Dr. Talbot's. I have no doubt, however, that with either instrument better work can be done in purulent conjunctivitis than by the old method.

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A CASE OF ACUTE ABSCESS OF THE ETHMOID WITH ACUTE SUPPURATIVE OTITIS MEDIA.

BY HERBERT DANA SCHENCK, B. S., M. D., O. ET A. CHIR.,

Brooklyn, N. Y.

THIS case is presented to put on record a cause that is not mentioned in the ætiology of acute suppuration of the middle ear in the description of this disease given in the text-books and to emphasize my success with the surgical treatment of this latter disease.

Case.—A school teacher, twenty-nine years of age, of slight physique and of nervous temperament, but withal capable of great endurance, who had suffered from neurasthenia some three or four years previously, was taken suddenly while in church on the evening of October 29, 1899, with pain in the right side of the face and nose. She hurried home, and, supposing she had facial neuralgia, applied heat, but got very little sleep during the night. She suffered greatly from the pain and fullness of the nose the following day, which began to have a discharge from the right nostril that evening described as thick and yellow. On the third day, October 31, she had severe pain in the jaws and face about the ears, and finally earache on the right side. This was followed on the morning of the fourth day by a watery discharge, which changed in twenty-four hours to a thin, pus-like discharge. In another twenty-four hours of acute suffering this changed to a flow of thick pus from the right ear, very similar in appearance to that from the right nostril, which had continued. On the fourth day she was quite comfortable, only to have all the symptoms aggravated on the sixth day of the attack. She had never had any trouble with her ears and continued to treat this with laudanum and heat locally without consulting a physician until November 5th, the sixth day. The pain in and about the right ear was more severe now than at any time and extended to the mastoid, which became quite sensitive. There was now some rise in temperature, prostration, anorexia, furred tongue and other symptoms usually accompanying acute involvement of the mastoid. Pyrozone was used to cleanse the thick pus from the ear by direction of her physician, who was unable to get a very good view of membrane owing to the swelling of the canal. He did not, however, deem the case serious enough to warrant him in calling a consultant until four days later, the eleventh of the disease, when the writer was summoned; but absence from the city prevented a consultation until November 11th, at the close of the second week after the discharge began in the nose. With her

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temperature at $102^{3}/_{5}°$, and so weak and prostrate that she remained up with great effort, she had dragged herself a long distance to the office when she should have been in bed. There had been little pain the two days previous to the examination, but the pain and tenderness over the mastoid had increased and the discharge from the ear had become more profuse and tenacious. The color was a light yellow, and it was attempting to escape from a small perforation just a little posterior to the short process and in the fold separating Schrapnell's membrane from the atrium. The swelling in the canal had lessened and the membrana tympani was only moderately reddened and thickened, while the mucus membrane of the middle ear was considerably swollen. The discharge was bland. The mastoid was very tender over its whole surface and pressure on the tragus caused considerable pain.

The right nostril did not show any swelling or inflammation of the mucous membrane anterior to the middle turbinated bone. Along the outer border of this body was flowing from above and behind the thick, yellow discharge which had the macroscopic appearance of that from the ear. There was a tendency toward atrophic catarrh in both nostrils, the left being perfectly dry and very open. Just at the junction of the right frontal and superior maxillary bones was a slight bony prominence which was somewhat tender to pressure. There was no other point in or around the orbit that presented any abnormal appearances. The patient declared that the tender point in the orbit had been there for a long time and had changed but little recently. There was a slight projection at the point in the left orbit where the same bones meet, but it was much less prominent than that in the right and not tender. The mucous membrane of the pharynx was slightly atrophic, but not inflamed or swollen.

The canal and membrane were dried and then an incision was made extending from below the centre of the atrium posteriorly upward through the membrana flaccida and out a short distance into the canal wall in its upper and posterior extremity. This gave free vent to the pus, and the middle ear was then cleansed by injecting, with a middle ear syringe having a curved canula, pyrozone, which, on its second injection after wiping the results of the oxidation away, cleared the discharge from the Eustachian tube and established drainage that way as well as through the free incision in the membrane. The patient was instructed to use pyrozone every three hours by instilling it warmed into the canal and drying the ear as soon as the action ceased. The thorough cleansing with the syringe was kept up daily for ten days, bichloride of mercury 1 to 3,000 being injected after the pyrozone had cleared away the pus and before the ear was dried; a loose piece of bichloride gauze was kept in the canal between treatments. The nose was sprayed with pyrozone three times a day and *Hepar* 3x in two grain doses was given every three hours.

Improvement was at once manifest and in ten days the discharge had ceased from the middle ear and the membrane was allowed to close, which it speedily did. The nasal discharge had also ceased at this time,

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as very little oozing was to be found along the middle turbinated. A careful search with a probe failed to locate any necrotic bone or detritus from the abscess. The improvement in the condition of the mastoid was continuous and by the time the discharge ceased there was little tenderness there, even to deep pressure. The temperature and pulse kept up a long time after the discharge had ceased and the mastoid seemed perfectly normal. It remained almost continuously for the next two weeks at 99° to 99$^{2}/_{5}$°, with the pulse at 86 to 90. She gained strength very slowly, and it was nearly three weeks after the discharge ceased before she ventured back to school. The function of that ear by this time had become almost as good as before the attack without the aid of any treatment after the discharge ceased.

The author is aware that C. S. Larsen reported late in 1898 some interesting experiments in the garrison hospital at Copenhagen, which seem to show that in these cases the best results were obtained by simply mopping out the discharge and treating the ear by plugging the canal with sterile cotton tampons. Still, it must be borne in mind that his treatment simply consisted in instilling bichloride 1 to 2,000, which is vastly different from the syringing and instillation of hydrogen dioxide, the latter leaving the tissues dry, while the former keeps them constantly soaked with water. Larsen reports that those in which prompt paracentesis was made healed more rapidly than those in which spontaneous rupture was allowed to occur. The writer's experience leads him to discard paracentesis and make a free incision, usually laying some part of the atic open, and to make the treatment of acute suppuration in great measure surgical. In five other cases similar ear symptoms to the one reported as regards the duration of the discharge and the recovery of the function were much better than the expectant or even powder treatment. All the cases were speedily relieved of the pain and the temperature was lowerd by the free incision and the cleansing. This method also opens the Eustachian tube and makes it possible to inflate the ear without so much danger of forcing the discharge into the mastoid.

There may be some questions as to the diagnosis of the condition in the nose preceding the suppuration in the ear, but it was based upon the position of the discharge on the middle turbinated and its constant flow here, which is said by Bosworth and others to be due to suppuration in the anterior cells, while a flow into the throat probably comes from the posterior. Bosworth thinks the ethmoid is more often affected than any of the nasal sinuses. That there were no orbital or eye symptoms present is exceptional, but not altogether unusual in this disease. Most of the authorities agree that this state of affairs may occur.

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W. Milligan has found that the violent and rapid otitic suppuration which most frequently leads to mastoiditis, thrombosis and other cranial complications is due to the streptococcus pyogenes, which is there present in larger numbers than any of the six or seven varieties of bacteria that have been isolated in acute suppuration. In the case reported the intensity of the symptoms and the rapid progress to the ear would point to an origin of this kind, where the mucous tissues of the tube and typanum furnished the pabulum, or were in just the proper condition for their rapid propagation. It would have been interesting and instructive if a bacteriological examination of the discharge from the nose and ear could have been made to determine this point.

DISCUSSION.

Dr. G. W. McDowell: There may be some question as to the connection between the disease in the ethmoid cells and acute suppurative middle ear disease. While I would not question the possibility of the extension of the pus from the ethmoid, still it might be that the same cause which produced the suppuration of the middle ear may have produced the same condition in the ethmoid cells. I remember one case of very striking interest. A man suffering from mastoid disease was admitted to the hospital. He had an attack of pneumonia, and a month later inflammatory signs appeared in the middle ear. This went on its usual course of suppuration and finally the mastoid became involved. The diagnosis was one of inflammation of the middle ear and mastoid from the pneumococcus. At the operation the first drop of pus was put on a slide and the pneumococcus found present. It would have been interesting to have found whether the same bacillus was present in the discharge from the ethmoid and middle ear in Dr. Schenck's case, although it would not have been positive evidence in that case that the one inflammation was due to the other, as the same condition might have been produced in both localities by the same germ. I think Dr. Schenck is to be congratulated on the rapid recovery of his cases.

Dr. J. L. Moffat: I infer that Dr. Schenck gave his patient *Calcarea picrata.* The medicine was evidently well indicated by the prostration accompanying and following these suppurative cases.

Dr. H. D. Schenck: It is to be regretted that Dr. McDowell did not give in his discussion more attention to the treatment advocated in these acute suppurative cases. It was to bring this before the Society that the paper was prepared, as well as to incidentally put on record a peculiar condition. The free incision, with the cleansing by antiseptic fluids of the middle ear and Eustachian tube, has certainly been the most successful method of treating this class of cases that the writer has found and has very materially shortened the length of time the discharge has continued.

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It seems to me if the sequence of the discharge from the ear is considered, the absence of any previous trouble there and of any other condition that would be likely to produce so violent an inflammation, the evidence is greatly in favor of the extension of the suppuration from the nose to the ear. Then, too, it occurred on the same side which, it seems to me, is another strong indication of its extension. The nasal trouble was evidently not acute, and the pocket of pus had remained in the ethmoid long enough to become very virulent before it was discharged. There was no evidence of any acute inflammation in any part of the nasal tract on either side, the only nasal trouble being the flow of pus along the middle turbinated bone when the case was first seen. If the pneumococcus, which is commonly found in suppuration of the middle ear, could have been supposed to have been produced by the pneumonia a month previous and to have been a cause of the ear trouble in the case the doctor cites, it seems to me much more logical to think suppuration in my case came from the pus in the ethmoid than from some unknown cause.

Calcarea picrata was given at a late stage of this case.

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KERATITIS DENDRITICA.

BY C. J. SWAN, M. D.,

Chicago, Ill.

DURING nearly eight months of last year, with short intermissions, I had under treatment in my private practice a case of dendritica keratitis, or, as Fuchs in one place in his text-book calls it, serpiginous keratitis or ulcer. The case, while not a severe one, was extremely persistent and recurrent, and, although it usually yielded readily to treatment after a few days, or at most within two weeks, the ulceration would light up again and before its progress could be arrested some little advance would have been made toward the pupillary region of the cornea, in which direction from the first it persistently took its course.

During my struggle with this, to me, unique case, I looked up the literature pretty thoroughly, and was surprised both at its amount and at the wide divergence of opinion among writers upon the subject as to its etiology, classification and nomenclature. After making an exhaustive search of the literature which, thanks to the Newberry Library, we have easily to hand, I found one case with a somewhat similar aspect, but none claiming the same etiology or running the same course.

Horner, of Heidelberg, in 1871, was the first to describe a condition which he calls herpes febrilis cornea, and under this title Hagenauer, of Zurich, and a few other writers of note prefer to class keratitis dendritica.

In 1885 Kip, of Newark, reported 120 cases of what he called malaria keratitis, all these cases having the peculiar dendriform ulceration and all alike presenting malaria symptoms and yielding to quinine treatment. He arbitrarily denominates this inflammation of the cornea malaria keratitis and found followers in his behalf in Godo, De Schweinitz, Hotz, Noyes, Sutphen, Green and Theobald.

About five years later, in 1890, Hansen Grut in one part of Germany and Emmert in another, both being evidently unaware of Kip's report, co-incidently wrote papers upon this subject. Hansen Grut gave an accurate description of dendriform keratitis and gave it the name of keratitis dendritica. This form is sometimes called from him, Hansen Grut keratitis.

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Emmert believed it to be a distinct disease of scrofulous or tuberculous origin, but in this position he appears to be isolated.

The following of these two authorities dignify the affection into a distinct and typical variety of corneal ulceration, susceptible of an individual nomenclature, pathology and treatment.

Noyes adopts the name proposed by Emmert, and calls it keratitis ulcerosa mycotic. He says that by this title Emmert describes cases which begin with a small ulcer and extend, branching from close under the surface, making a figure like branches of a tree. The lines are white and the epithelium is soon shed, leaving open furrows. The subjective symptoms are severe, recovery occupying six or more weeks.

Hagenhauer, in his article of 1891, says: "Hansen Grut, Emmert, Kip, Kock, Macrocki and Van Millegan have mistaken for a new disease what Horner described twenty years ago as herpes cornea, and recommends the discontinuance of the terms keratitis dendritica, keratitis ramiformis, keratite ulcereuse en sillons etoiles, furrow keratitis and malaria keratitis. All ought to be classed under the original and correct name, herpes cornea febrilis."

Kendall, of Paris, classifies the etiology of 256 cases of herpes cornea febrilis, but makes little or no distinction between the type accompanied with zoster frontalis and what is described as the dendriform ulcer. The causes given in this classification were coryza, cough, pneumonia, intermittent fever, chills and fever, rheumatism, gastric catarrh, hay fever, typhoid fever, toothache, whooping cough, cessation of chronic discharge from nose, erysipelas, child-bed, and thirty-seven cases with no existing malady.

Allport, in a very clever paper upon this subject, and to whom I am indebted for several good points, reports a case of dendritic ulcer following a slight attack of gonorrhœal ophthalmia, and Hirschberg mentions three cases of this form of keratitis occurring in influenza and appearing three to five days after the commencement of the fever.

Whether keratitis dendritica is a variety of herpes cornea, as believed by Horner, Hagenhauer and their followers, or a malarial keratitis as believed by Kip, Hotz and others, or is only an ordinary corneal ulcer having a fantastic shape, is a question the answer to which does not appear in our text-books and which the discussion of this paper ought to help to decide.

The following is the report of my case:—

Case One.—H. A. P., referred to me by Prof. J. P. Cobb, aged forty-six, married; has several robust children; is in affluent circumstances;

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family and personal history without a blemish; rather a heavy smoker, but a total abstainer from spirituous liquors. Came to me first in May, 1899, complaining of a sensation of a foreign body in the eye. There was no foreign body and it was only with the aid of focal illumination in the dark room that I discovered a minute spot of infiltration in the superficial layers of the cornea, on the nasal side of the scleral margin, at about the junction of the lower and middle thirds. The lids were in good condition and the patient in perfect health, so far as I could learn by questioning him.

There was an almost imperceptible injection of the vessels of the sclera in that region and no other symptoms.

I ordered a boracic acid wash and an appropriate internal remedy, instructing the patient to report in a couple of days in case the eye was still uncomfortable. At the end of two days the patient returned complaining that the eye continued to bother him. The infiltration seemed to have gained in size and I now ordered atropine and dark glasses. During the third visit I used a 2 per cent. solution of fluorascin, and found that the spot took the stain, showing that the epithelium had come away.

The ulceration made intermittent progress for eight months, finally arriving over the pupillary region and leaving behind it a dim white scar. The term furrow keratitis would not apply to this case, as the furrow was filled up and healed over as fast as new localities were uncovered, the only denuded spot being at the foremost end of the line of progress. This loss of substance never exceeded the diameter of a pin head and was often so small that the absence of epithelium could only be definitely determined upon with the aid of the fluorascin.

After about three months of treatment the cornea began to take on an unhealthy appearance and showed three more foci of infiltration. However, all but one of these finally cleared up. This one was situated at the lower border of the pupillary region and extended itself two or three mm. toward, and finally after a couple of weeks joined itself to the original line of ulceration, which had already extended well toward the center of the pupillary region. This gave the line of the ulcer the shape of a Y, and from this time it advanced by two branches, thus assuming the dendritic form.

The ulceration never seemed to penetrate much deeper than Bowman's membrane, the scar showing as hazy lines. The ulcerative process was permanently arrested after reaching the center of the cornea. During all the eight months there was never pain in the eye, except rare slight twinges, never any scleral redness that would have been noticeable to the casual observer, never any lachrymation, blepharospasm or photophobia. An annoying feeling of roughness, as though something were in the eye, was the sensation most complained of by the patient.

The local treatment was varied from time to time and included atropine, eserine, boracic acid solution, bichloride solution, nosophen solution, permanganate of potash solution and pyoktanin. The ulcer

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was scraped and rubbed with bichloride solution. The actual cautery was used. It was touched and rubbed with absolute alcohol. The negative pole of the constant current was tried as a stimulant, as was also massage with calomel and with yellow and red oxide of mercury in cerate form. The eye was bandaged several times for a week or two at a time. With the exception of the atropine and the massage with irritants, I think all these measures proved useful and I succeeded again and again in inducing the ulcer to heal, only to have it break down again in a few days or weeks. I thought the atropine interfered with the nutrition of the cornea and the eye did not do as well under that as under eserine. Massage with irritants removed the rather soft epithelium which had formed over the diseased portion and did not promote healing.

Internally I gave a great variety of what seemed to me indicated remedies, although the indications were meager, all pathological symptoms being absent except those of the eye. I also tried quinine, iodide of potassium, and salicylate of soda under the far-fetched theories that malaria, uric acid, or syphilis might have a part in the difficulty, all without appreciable improvement in results. The urine had been examined several times and about two months before a final cure was accomplished, Doctor Wilson examined the blood. He found no malaria plasmoidia, but did discover a lack of white blood corpuscles, leucocythæmia. For this condition Doctor Cobb, the patient's family physician, suggested Protoneuclein. This, with the aid of the topical treatment which I finally decided upon in the course of a couple of months, during which there were two or three slight relapses, accomplished a permanent cure.

The topical treatment which gave the best results consisted first of a pair of dark, wire rimmed goggles in which, over the affected eye, was thrust a wad of cotton large enough to make pressure on the lid and prevent it from sweeping over the cornea and removing the newly-formed epithelium—acting as a bandage, minus many of the inconveniences thereof. The eye was kept under the influence of eserine in mild solution, was washed three times daily with warm boracic solution and every other day the ulcer was touched with absolute alcohol, almost immediately washed away with boracic solution.

I am glad to say that today there is scarcely any impairment of vision in the affected eye, the patient reading $^{20}/_{20}$ with ease, but says he notices a little haziness.

In this case there was nothing of the herpetic form; ulceration was preceded by no vesicles and there was no pain or lachrymation. Therefore, I am inclined to take my stand with Hansen Grut and affirm that keratitis dendritica should be dignified by a nomenclature, a pathology and a treatment of its own. This case at least cannot be classed under the head of herpes febriles cornea.

After using protonuclein, subsequent examination of the blood show-

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ed there was a great increase in the white blood corpuscles, and I think that was a great help to me in finally making a permanent cure of the case.

DISCUSSION.

Dr. H. D. Schenck: Dr. Swan's case called to my mind a case that I treated last fall, an old gentleman, nearly eighty years old, whose eyes I had treated sometime before for immature senile cataract. He was apparently in vigorous health and had been up in Duchess county during the summer in a hotel which he described as having a disabreeable, musty smell in many of the public rooms. He was kept in the house a good deal and thought this had given him malaria. He did not feel well when he came back, and during the greater part of the time he was under treatment had a morning temperature of 99°, with 99½ or 100° in the evening. This persisted, in spite of the various remedies that were given, for three or four months, which included quinine, *Arsenicum, Sulphur,* and others. Early in October he developed an ulceration, beginning towards one side of the cornea and gradually creeping in the branched lines, that the doctor so well described, until it reached the centre of the cornea, where the progress was stayed and healing finally took place. My experience, similar to Dr. Swan's, was that the ulcer would heal only to break out again in two or three days. The treatment that seemed to be of greatest benefit in the case was the local use of protonuclein. I had the patient dust the cornea three or four times a day with protonuclein powder, pure, and give the cornea a little massage afterward. A few days after the application was begun there was a change for the better, which resulted finally in the healing of the ulceration and the clearing up of a good part of the sclerosed tissue.

Dr. G. W. McDowell: I have heard of a case of Dr. Norton's a year and a half ago that had a persistent superficial ulceration of the cornea for a number of weeks, and nothing seemed to improve it. Protonuclein powder was applied on one afternoon and the report of the nurse in the hospital the next day was that the child had opened her eyes the next morning for the first time in weeks.

Dr. H. D. Schenck: He mentioned it this afternoon, doctor.

Dr. G. W. McDowell: Is that so? I saw the child myself and they said that improvement had continued and they were using the protonuclein right along and the child had kept its eyes open, where before it had kept them buried in the pillow.

Dr. J. N. Anderson: I want to substantiate what the doctor has said in regard to protonuclein use. In anæmic cases, post-operative, I use the protonuclein, five-grain tablets, about four or five times a day, and in cases of cataract where I am a little afraid of the condition of things. I have had very great satisfaction in its use locally also.

Dr. B. S. Stephenson: In corneal ulcers I have found that by using

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cocaine and curetting they will heal more rapidly than by any other method.

Dr. W. B. Kreider: I wish to relate a case of keratitis. It had a history, possibly, of traumatism. I left the case hardly far enough advanced to come to meet with you, but if I can find a point that will be of service in the treatment of the case I should be paid for coming. This case progressed so far that the anterior chamber was, we might say, $^2/_3$ full of pus, and a question arose, Can that pus be absorbed without an operation? It was four weeks ago that I first saw the case. The pus had formed four days previously, and at this time it had extended so that there was no pupil, that is, no light entered the pupil. I treated it with local and internal remedies, but in this way: On the corneal part of the ulcer I dusted nosophen, and also used 1 per cent. atropia three times daily, and internally I used *Hepar sulphur.* In the course of three or four days' treatment I could see that the condition was arrested; there was no further progress in the formation of pus and there was a little bit of progress in the absorption. I kept on with this treatment for four weeks, or about the time I left home, and at the present time there is about $^1/_3$ the amount of pus in the anterior chamber that there was four days after the pus began to form. The case looks to me like a promising one, and yet there is enough pus in the anterior chamber to give me concern, and I would like the opinion of the members of this Society which is the better treatment, to open the anterior chamber or depend on the internal or local treatment, hoping to absorb it all?

Dr. B. W. James: I would suggest a plan in several of these cases where they are obstinate. My method is to wash the eye out with boracic acid solution, and then a powder of boric acid with tincture of arnica, or some similar preparations, and by insufflation place it dry on the cornea, has enabled me to obtain healing where I could not otherwise. Prepare boric acid powder and arnica tincture by mixing them up well. Then dry and repowder. It must be very fine; hold the eyelids open and under the influence of cocaine and blow on just enough to coat the ulcer over. I have not used the protonuclein locally, but I have used it internally in some of these cases, but never received any benefit whatever from it. I never felt that it had increased the cells or bettered the condition of the patient at all.

Dr. E. J. Bissell: My experience with an incision for pus in anterior chamber has not been satisfactory, so far as securing good vision goes. I think the actual cautery is the best treatment in connection with homœopathic remedies for corneal ulcers.

Dr. C. J. Swan: There seems to me to be no doubt that a majority of the cases of keratitis dendritica result from malarial poisoning. I believe that anti-malarial treatment would have helped Dr. Schenck's case.

In case of a large amount of pus in the anterior chamber evacuation of that pus at the earliest possible moment appeals to me as good surgery and good medicine.

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THE DIETETIC MANAGEMENT OF TRACHOMA.

BY THOS. M. STEWART, M. D.,

Cincinnati, O.

THE word dietetic, in the title of this paper, is intended to emphasize that part of the treatment of trachoma cases. The diet is a factor in every such case, as, indeed, it is in all cases of chronic disease. Its value as a curative measure may be gleaned from the following case, which is fairly typical of what is done in the management of trachoma cases under the author's care:

Case.—Male, age thirty, employed in a factory; a machine hand. Treatment begun October 25, 1897.

History.—Two years previously eyes began to cause trouble. First noticed a sensation of a foreign body in the eye. Thought it was a cold, warm chamomile application gave temporary relief. Frequent recurrence of same inflammation, each succeeding one more severe than the preceding. Within three months of the onset of the trouble the patient went to a competent oculist, and he was under continuous treatment for eighteen months, during which time he had many local treatments. Knapp's operation with the roller forceps was done as a last resort, and the eyes have not been so well since that time. Under another oculist, in a different city, he had a three months' course of treatment. As soon as the treatment was suspended he relapsed; and the treatments themselves helped but a little, retarding only the ulceration of the cornea. His brothers and sister also have granulated lids.

Special History.—The patient states that the eye condition is aggravated from colds in the head. May feel good for a week or two, then a relapse occurs. He was better in cold weather and in the open air. Photophobia all of the time, by daylight or by lamp light. Constipated habit, frequent, ineffectual urging to stool. Frequently has a sour stomach, belching of gas. All symptoms worse in the morning.

The eyelids of both eyes showed the trachomatous condition. Left cornea presented a central vascular ulcer. There was a soft hypertrophy of the anterior end of the middle turbinated body. Cocainizing this enlargement reduced the pain in the left eye, and lessened the lachrymation and photophobia. Subsequently the hypertrophy was permanently reduced by chromic acid.

October 25, 1897.—Nux vomica, $^1/_{10000}$, was prescribed four times daily. Atropine was used in 1 per cent. solution twice daily. *Kali bichromicum,* $^1/_{10000}$; *Natrum muriaticum,* 30th; and *Rlus toxicodendron,* $^1/_{10000}$, were used according to indications and with benefit. There was

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a steady improvement from October to January. A suspension of treatment, simple as it was, was followed by a relapse.

January 23. 1898.—Inquiry elicited the following: Eats very little meat; eats no fat of meat and but little butter or cream. Likes plenty of salt and pepper on food; drinks much water at meal times. Smokes excessively and chews a pound of tobacco in two weeks.

The patient was directed to eat generously of meat and of plain vegetable foods. To drink plenty of water, but to take the water between meals, not just before or after meals. Salt and pepper were cut out entirely. Tobacco was gradually cut down, so that a pipe or two a day and very little to chew sufficed. Cod liver oil was prescribed to make up the daily fat allowance. The oil was given in small doses on an empty stomach, morning and afternoon.

Again a gradual improvement was noted. No local treatment for the eyes was given beyond atropine once a week.

The persistence of the *Pulsatilla* indications was responded to and finally all symptoms subsided. The photophobia continued greatly to the inconvenience of the patient. On account of the increased work placed upon the glandular system, occasioned by the change in the habits of eating and drinking, symptoms of renal irritation appeared. *Cannabis indica,* $^{1}/_{1000}$, met and removed the following—"sensitiveness of eyes to light, trembling or glimmering before the eyes, urging to urinate with tardy flow of urine.

The diet was continued slightly modified from time to time, and at the end of eighteen months he was dismissed, cured. He was instructed to follow somewhat along these lines:

First.—To eat lean meat, eggs, and things made with eggs, not more than twice a day. This limited the nitrogenous elements of his food. He was directed to abstain from these foods altogether if his bowels failed to move two days in succession, and to return to this class of food gradually. He had gradually acquired the habit of daily evacuation of the bowels, securing a regular time for the calls of nature, whether or not any desire or urging was felt.

Secondly.—He was directed to drink plenty of clear, soft water. Not at meal times, for that would chill the stomach and dilute the digestive fluids.

Thirdly.—He was allowed to eat of all vegetables at pleasure, securing as much variety from day to day as possible. To aid in the oxidation of all food products, deep inhalations of the open air were ordered—at least one hundred a day, at morning, noon and night intervals.

Fourthly.—Butter, cream, and crisp cooked fat of meat were advised, in order that the animal heat of the body might be maintained at no expense to the carbo-hydrates.

Fifthly.—Tobacco was finally discarded. Coffee was allowed once a day, because it acts as a retainer of the nitrogenous food stuffs, useful, therefore, as a stimulant, allowing the energy of the nitrogenous foods to be longer utilized—but in many cases a positive harm.

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Sixthly.—He was further advised to bathe frequently, and to circumscribe his desires in all other directions, and by living a temperate life he has not only been cured of his trachoma, but the cure has been maintained.

The value of dietetic measures in the treatment of trachoma is further emphasized by twenty other cases, carefully followed during the past three years, along the lines herein outlined. Relapses occurred because of departure from the dietetic rules, prompt improvement resulted from a return to those rules. Continued freedom from inflammation can be secured only by a rigid adherence to such measures as have proved themselves of benefit to each particular patient.

DISCUSSION.

Dr. Emma L. Boice-Hays: In presenting this paper Dr. Stewart has brought before us a part of the treatment of trachoma which is almost entirely neglected. I must confess that I have not looked carefully into the *diet* of my trachomatous patients, being content with cod liver oil, protonuclein, and general directions to eat nourishing food, and keep the bowels open. Perhaps if we individualized more and generalized less we would be more successful in this class of cases.

We all know that atropine alone will cure many cases, when the patient is surrounded by proper hygienic conditions, and this remedy was used throughout the entire treatment of the case presented, instead of the harsher methods.

Dr. Stewart has presented his case, an aggravated one, too, treated and cured homœopathically; one which was made worse by use of roller forceps.

It would be of interest to know the result in some others, treated in the same manner (with atropine alone locally, correct diet and indicated remedies), which had *not* been treated with roller forceps, whether the improvement began sooner where they were not used, or whether the roller forceps treatment delayed the cure.

Dr. H. D. Schenck: While I have nothing to add to what Dr. Stewart has said as regards the diet, I think it is important. I have treated trachoma locally with iodide of silver, which I think has been very much better than the copper or any other caustic preparations I have hitherto used. I do not remember where I came across the recommendation, but I have used the iodide of silver for three or four years and in a number of cases. It is made by taking one part of silver nitrate, two parts of glycerine and one part of water, which when mixed makes solution No. 1. Then two parts of iodide of potash, four parts of glycerine and two parts of water mixed for solution No. 2. To five drops of No. 1 add ten drops of No. 2 and you get a yellow, flaky, gelatinous mass that is to be applied by a swab directly to the lids. It is followed by very little irritation, but marked results were produced in

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the cases in which I used it in reducing granulations and bringing about a normal condition of the mucous membrane. The latter is not denuded, as by using other caustics, but returns to its normal condition and the cornea, where there is pannus, gradually clears. A woman who had had all sorts of treatment was under my care two years ago suffering with trachoma and pannus which she had had a good many years. She was fairly well nourished, and had had the lids treated with the roller forceps several times and with caustic times without number. The disease has steadily progressed until she could with difficulty do her housework, had much photophobia and did not dare go into the street for fear of being run over. She was treated for two or three months, being seen occasionally, and having her apply the iodide of silver twice a day to the lids. The result was that the last time I saw her she had $^{15}/_{100}$ vision, where before she had barely been able to count the fingers at six feet, had absolutely no irritation of the eyes, and the corneas were steadily clearing. The mucous membrane lining the lids had become soft and velvety, where before it had been streaked with scar-tissue.

Dr. E. J. Bissell: It is a great pleasure at these meetings to listen to a paper that inspires me to go home and carry out its teachings, and this is one of those papers. This treatment seems rational, and I, for one, want to thank the doctor for bringing this question up. I will go home and try to do better.

Dr. C. L. Rumsey: I want to express my pleasure and the profit I received in hearing this paper.

I believe the dietary regime is an important factor in all diseases. I believe we specialists do not advise patients in this matter as we should. We ought not to exclude blood count and examination of the excretions of the body, which aid us very materially in properly advising our patients.

I suggest to my colleagues the use of boracic acid powder rubbed over the trachomatous lids. I prefer cocaine as a local anæsthetic. With the lids everted, I rub the powder over them with my forefinger covered with sterile gauze, having previously washed the hands with green soap and bi-chloride solution, $^{1}/_{10000}$, and dried with a sterile towel. There is considerable bleeding, which is lessened at each seance. It is remarkable the antiseptic action this treatment has on the lids. I find *Aurum mur.* 3x given three times daily is the most efficacious remedy.

Dr. J. L. Moffat: My experience has been in line with my teaching, that the retro-tarsal folds are what we must reach if we hope to cure trachoma, and I would find it rather difficult to rub the upper retro-tarsal fold with the finger. This treatment may be very valuable in some cases.

I wish to speak a word for the nascent iodide of silver that Dr. Schenck spoke of. I do not know that he emphasized enough the fact that it must be prepared fresh every time. I have seen as fine results with it as with anything in my experience, yet it is not a cure-all.

Another method with which I have always had results as good as with

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iodide of silver, and in some cases better, is a solution of *Formaldehyde,* just strong enough to cause irritation to the eye, with redness, which passes off in a few minutes. The patient instils a drop into the eye every three hours, beginning with $^1/_{2500}$, increasing the strength as the eye becomes tolerant.

As to dietary treatment, I must confess that I have not paid sufficient attention to that, and I want to thank Dr. Stewart for calling my attention to it, practically and in detail. I have been careful to keep my patients in a dark room, or in the house, and to see that they had fresh air, but I had not thought of restricting food. I should think that would be a very important factor in many, if not all, cases.

Dr. B. W. James: I think this dietary idea is an excellent one, particularly in calling attention to the fact that coffee limited the amount of digestion and held the elements there. In regard to Dr. Rumsey's remarks for the use of boric acid in the eye, I think if you will recall the discussion upon keratitis that I mentioned the fact that I was in the habit of using finely powdered boric acid with calendula, but in these cases I used the arnica. The preparation is made with fine, dry powder of boric acid and then the tincture of arnica or calendula, or other uncompounded proven remedy is mixed up with it and then allowed to dry. Then repowder. I have this prepared in the office. My method is by means of a little insufflator to take up some of the powder, open the lids and throw it in with a puff through the tube. I think the arnicated boric acid powder has a special curative action. I have received some good results in that way by the use of boric acid itself, which has a slight stimulating effect, but especial benefit is derived by the action of the remedy and powder direct.

Dr. G. DeW. Hallett: I want to express my appreciation of the paper of Dr. Stewart, calling attention to the dietetic management of trachoma; and also to speak of a non-dietetic treatment which has been used for sometime at the N. Y. Ophthalmic Hospital, and which consists of using a solution of bichloride of mercury ($^1/_{1000}$) by applying it with a strong probe, on which is tightly twisted quite a considerable amount of cotton. After the conjunctiva has been cocainized the upper lid is first treated. The lid is held a little forward from the ball of the eye, so as not to irritate it, and the probe carried well up into the fornix, where friction is made from the inner to the outer canthus a number of times.

In the first treatment there may be a little bleeding. The lower lid is treated in the same way, holding it off from the eye-ball. There might be a little reaction for several hours after the first treatment. If so, ice is useful. I would suggest in the case of boric acid powder that Dr. Rumsey uses, that if he would use a pledget of cotton twisted tightly on a strong probe it would seem a nicer operation, instead of using the finger. I do not see how he uses his finger effectively in the upper lid. In using the finger on such cases it might occur to the patient that perhaps that finger had lately been so used in an even worse eye.

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Dr. G. M. Haywood: I had good results in a case by rubbing the lids with a 5 per cent. solution of protargol. There was a little discharge, and I found quite good results from this treatment.

Dr. J. H. Payne: The method adopted in the homœopathic dispensary in Boston is simply to evert the lid and apply Peroxide of Hydrogen, getting as near the retro-tarsal fold as possible, after scarifying it longitudinally. We get most excellent results in the majority of cases in this way. It has not been mentioned today.

Dr. T. M. Stewart: I am obliged to the members of the Society for presenting the methods they find most useful in treating trachoma. They are new to me and I have not used them in the manner described. The purpose of the paper has been to bring out discussion, and it would be very impertinent for me to start in on any lengthy talk regarding dietetics in some other cases. I may say that the discussant asked questions that should be answered. She asks: "It would be interesting to know something about cases that had not had any operative measures tried on them." The latest case that I can recall is that of a printer. Every time he departs from a proper diet he has a relapse. When he limits his food and lives in the manner he should he gets well and is able to continue his work without loss of time.

Dr. J. L. Moffat: Does he live in a damp room?

Dr. T. M. Stewart: No; he lives in one of our suburbs and sleeps on the second floor, an excellent place, high and dry.

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SOME OBSERVATIONS ON "NASAL OBSTRUCTION."

BY NATHAN SMILIE, M. D.,

Philadelphia, Pa.

IN writing this paper it is not my intention to try to instruct, but rather, by presenting some observations, to get more knowledge through the discussion which I hope they will arouse; and to present some points which have given me much food for thought and study because of peculiar origin or sequence.

Case One.—One of my earliest cases of nasal obstruction was, I believe, a case of fibrinous rhinitis. Mr. H. S., age thirty-five, was taken suddenly on February 4th, 1895, with a severe chill, accompanied by excessive vomiting of black coffee ground sediment, partially digested food and mucus. This continued about three hours, when fever developed, accompanied by severe abdominal pain, temperature over 103°. He was seen by a consultant and the case diagnosed as pneumonia. Five days later the fever and pain had abated and the patient was apparently doing well. On the seventh day he complained of sore mouth and obstruction in the nose, with excoriation about the nasal orifice. On examining the nasal cavity by reflected light a grayish deposit was discovered covering the turbinateds and septum. On the tenth day a membrane making a complete cast of the anterior nasal chamber was removed from each side, followed by considerable hæmorrhage. The nose was cleared out twice daily and carbolated oil used frequently. Twice daily an application of glycerine 1 ounce, iodine 15 grains and carbolic acid 5 minims was made with a cotton probe.

There was no fever or other disturbance, except the local trouble. No Klebs-Loeffler bacilli were discovered in the nasal discharges, and a good recovery was made under the above treatment.

Price-Brown cites a similar case in his work issued January, 1900, page 71:

One of the well-known factors in defective vision is astigmatism. How few cases examined with a mydriatic fail to show astigmatism of a high or low degree. I have often tried to trace some relation between this condition and nasal obstruction or other disease, and in a few cases felt that I found good grounds for such belief. In children I have several times seen strabismus that was aggravated by nasal disease of obstructing nature. The intimate relation between the blood and nerve supply of the two organs must be studied to explain their connection.

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The anastamoses between the blood supply of the nose and eye are many. The nasal artery is a termination of the ophthalmic supplying the lachrymal sac and then continuing to divide into two branches, one of which anastamoses with the angular artery, the other branch, the dorsalis nasi, supplies the entire external surface. A branch of the palpebral artery passes to the nasal duct, ramifying as far as the internal meatus.

The nerve supply follows suit, the ophthalmic nerve supplies the eyeball, the lachrymal gland, the mucous lining of the eye and the nasal fossæ. One branch of the nasal nerve is the long root of the lenticular ganglion, while the inferior branch of the motor occuli supplying all the muscles of the eye, except the superior oblique and the external rectus, forms the short root. The external rectus is supplied by the abducens and is joined to the ophthalmic by a branch. The superior oblique being supplied by the trochlear, which arises close to the origin of the trifacial and connected to it by a band close to its origin. The rotary motion of the eye is thus governed by the superior and inferior oblique muscle, which are supplied by the occulo-motor and trochlear nerves, in turn connected with the nasal branch of the ophthalmic. These muscles influence largely the shape of the ball, theoretically. Thus any disturbance of the nasal branches of these nerves must bring some influence, good or evil, to bear on the action of these muscles of the eye.

Case Two.—In line with the above is a case which has been under my observation for four years. Mr. T. W., age thirty-three. Wearing glasses with vision O. D. $^{3}/_{200}$. O. S. $^{15}/_{30}$. Esophoria 16°. Hyperphoria, right, 8°. Also, a chronic hypertrophic rhinitis. Examined with a mydriatic and prescribed lenses R. — 4. ⌒ — 1.75 cy. ax. 180° L. — 2. ⌒ — 2.25 cy. ax. 180°, and gave prism exercises and applied local treatment to nose. The vision slowly began to improve, and as the nasal condition improved the vision became stronger and muscles more evenly balanced. Several times in the succeeding years during bad attacks of rhinitis he has consulted me about re-examining the eyes to change glasses, as he noticed considerable blurring of vision, but a removal of the local nasal treatment removed the trouble. I made an examination April 14th, 1900, and found the vision in each eye $^{15}/_{20}$ plus, the lenses not having been changed since January, 1896, although the astigmatism varied during the severest attacks of rhinitis.

Case Three.—A recent case which gave no little anxiety was that of a lady who came to me chiefly for treatment for a hypertrophic rhinitis. She complained of her glasses not suiting her as well as when they were fitted a year or so earlier. I found she was wearing R. + 0.12 ⌒ + 0.75 D^c. ax. 125° and L. + 0.12 ⌒ + 0.75 D^c. ax. 180°, with vision of $^{15}/_{20}$ O. U., but that when the axis was changed to 75° each eye she read

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easily $^{15}/_{15}$. I prescribed *Gelsemium* 3x internally and made a local application of glycero-iodide. Four days later I made a second application and gave her six powders of *Kali bichromicum* twelve hundred potency. On the next visit she complained of blindness in the temporal half of the right eye field, which, on making the usual tests, I found to be true. On making an ophthalmoscopic examination the fundus appeared to be normal and the light projection perfect. At the end of four days more this had increased to the extent that she could not read $^{15}/_{200}$ and could not read the largest type at twelve inches. I stopped the local applications and gave *Nux vom.* IX. Five days later the vision had improved to $^{15}/_{50}$ right eye, and she still chose axis 75°. Local applications were renewed cautiously and without more disturbance of vision. Rapid improvement in the nasal condition followed, and at the end of six weeks I found on examination that the original axes of the cylinders, right 125° and left 180°, were chosen with vision of $^{15}/_{15}$, showing that the eyes had returned to the condition present when the previous (ophthalmologist's) examination had been made and lenses prescribed. The doctor who gave me the *Kali bich.* twelve hundred potency would not acknowledge the disturbance of vision as the result of the remedy. A prominent neurologist to whom I cited the case gave the opinion that the visual disturbance was reflex from the irritation set up in the nose by the local applications. What changed the axis of the astigmatism?

I have several times been impressed by the fact that the general practitioner and at times the trained diagnostician fail to realize the full extent of the reflex symptoms produced in the pulmonary respiratory tract by nasal growths and obstructions. I believe the reflex relation is more intimate than the text-books would lead us to believe.

Case Four.—For example, I was called to see a man suffering from what was apparently a genuine case of spasmodic asthma. His history as I afterward learned it was rather unique. He was a lieutenant in the United States army and had been discharged after examination by an examining board of army surgeons, with the diagnosis of incipient locomotor ataxia. He came to Philadelphia and was treated by a celebrated "Nervous Diseases" specialist, without relief. The patient says his trouble was diagnosed as hysteria and he was given the rest treatment. When I first saw him he was doing *stunts* of *Cheyne-Stokes* respiration, and each climax, it seemed, would be his last. I relieved the paroxysm with the usual remedies, but they recurred frequently on succeeding days. In my efforts to locate the cause of the trouble I used an expedient which is of much service as a diagnostic method of asthma. During a severe paroxysm I thoroughly cocainized the nasal cavity each side, and to my satisfaction the paroxysm stopped. I have read and heard it stated from the lecture room platform that "asthma was due to a neurosis of the pneumogastic nerve." This case looked to me like

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polypi, and although the patient assured me he had been examined for polypi by a specialist, I thoroughly cocainized the turbinateds and found the cause of the asthma in his case to be a number of small hard polypi in the region of the mouth of the frontal sinus and along the lower border of the superior turbinated body. During the interval between January, 1896, and July, 1897, thirty polypi were removed from the nose, using a cold wire snare, as many were far back beyond the range of vision. Hæmorrhage was profuse, but controlled by McKenzie's styptic fluid. Pain was intense, being only partly controlled by a 4 per cent. solution of cocaine, all the patient could stand without toxic symptoms. A purulent bronchitis which had alarmed him very much disappeared along with the asthma when the nose was thoroughly cleared out. From a physical wreck he improved so that he was able to take a course in law and graduate from the Georgetown University Law School, and has gone to Phoenix, Arizona, to practice. (I never could detect any signs of locomotor ataxia, as stated in the army board's report.)

Case Five.—Dr. J. A., dentist, age about twenty-eight, came under my care with the history of rapidly failing health and a diagnosis of incipient phthisis pulmonalis by all his friends, and his former medical attendant had advised a change of climate. Cough on the least exertion and after a rapid walk of a few squares wheezed audibly. He informed me that his nose discharged so profusely that he had to wear a napkin around his face when working at the chair. Examination of the chest showed sunken supra-clavicular spaces and mucous auscultation; of the nose revealed a hypertrophic condition of the turbinateds, so that the normal canals were closed and air could be forced through only with great difficulty. Local treatment in the form of glycero-iodide and carbolic acid, with cleansings between application with glyco-thymoline. Internally, *Gelsemium, Hydrastis* and *Sanguinaria nitrate* very irregularly, as he lacked faith in remedies. Decided improvement showed after the first month, and at the end of three months he had gained ten pounds, making a good recovery from then on. Two years later I saw him at the end of a ride over three miles of up hill country on his bicycle, and he showed no signs of dyspnœa, nor does he show any signs of tuberculosis up to date. He has taken care of a large dental practice through it all.

To close I would like to ask a question: Would not better hygiene and earlier and more systematic care and treatment of all forms of nasal obstructions and diseases stop the inception of the germs in many cases of that all too prevalent disease tuberculosis? When we consider that the functions of the nose are many-fold, it not only acting as a funnel to inspire through and a resonator to the voice, but it warms the air by contact with its mucous folds and to a certain extent filters and cleanses it with its cilia and the secretion of mucus glands. How many millions

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of germs are thus daily caught and removed in the normal mucous discharges!

Of course not all of them pathogenic, but many more than at first thought possible, as has been proven by frequent, systematic and exhaustive bacteriological examinations.

DISCUSSION.

Dr. J. E. L. Davis: Nasal obstruction is certainly a very important subject, although it may not be the most interesting, as good health and solid comfort largely depend upon a normal nasal condition. Dr. Smilie has given us some interesting cases, with diagnosis and treatment. The doctor evidently studies his cases very closely, is a careful prescriber and a conservative operator, but in the way of discussion I would like to differ somewhat in his diagnosis of fibrinous rhinitis. I would incline to name it diphtheria. The duration of the disease is not given by the doctor, but the treatment is similar to that given by many physicians for diphtheria, except in the premature or forcible removal of the necrosed tissue which might have produced a fatal termination.

The primary deposit probably occurred in the vault of the pharynx and the nose became involved by extension. The severe chill followed by excessive vomiting marked the advent of the diphtheritic poison into the circulation, and although Klebs-Loeffler bacilli may not have been discovered, yet from the symptoms I would unhesitatingly diagnose the case as diphtheria. Klebs-Loeffler bacilli have been found upon the normal nasal membrane and no diphtheria resulting—a fact clearly proving that infection largely depends upon the condition of the system at the time of contact with the bacilli.

I had a case similar to the one Dr. Smilie calls fibrinous rhinitis with a girl fourteen years of age. The membrane filled the entire nasal cavities, even projecting anteriorly; she was sick about six weeks, but made an uneventful recovery; while her sister, seventeen years of age, who probably contracted the disease at the same time, complained of a stiffness in her throat a week later. An examination revealed a well-developed laryngeal diphtheria. The membrane spread rapidly to the adjacent tissue, particularly to the lower air passages, although mildly affecting the nasal tissues. It proved to be one of the worst cases of diphtheria I have ever seen. There was septicæmia, with mal-nutrition and the attending vital depression. For several days all attempts to swallow liquids resulted in their forcible ejection—often returning through the nose. Pneumonia and acute Bright's disease followed; later on there was a form of paralysis which chiefly affected the extremities. The patient fully recovered, but was under treatment for nearly a year.

On different occasions where there were two or more cases in the same family the mildest ones were those in which the deposit occurred in the vault of the pharynx and the nasal membranes principally were involved. I am inclined to think that Klebs-Loeffler bacilli are more

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frequently found in the throat than in the nose, and bacteriologists are not always as careful as they should be with the culture in distinguishing the true from the false bacilli.

A short time ago I was called to see a child of seven years who two days previous to my visit had been suddenly taken with vomiting and high fever. The mother, in her excitement, sent for the nearest physician, who, upon observing the deposit in the fauces promptly had a bacterial culture made, pronounced the case diphtheria and so reported it to the Board of Health. The case was placed in my hands and a careful examination convinced me that it was a case of tonsillitis and not diphtheria. I so informed the Board of Health, treated the case accordingly, and in a few days the child was out playing and had no further trouble. I think in this instance the bacteriologist was at fault and the doctor too credulous, otherwise the bacilli theory is not altogether reliable.

As to treatment I have never used antitoxine. I have been most successful in the treatment of diphtheria and believe the homœopathic remedies far superior to the serum treatment. I use very little local treatment—perhaps a spray or gargle, but never anything harsher. Stimulants I think necessary in diphtheria.

Dr. Smilie will kindly pardon me for differing with him in this case and saying so much about diphtheria, but it is a dreaded disease, and I shall be glad if others will give their views upon the subject. In my study of the disease I have given more attention to clinical diphtheria than to bacteriological cases.

I have already taken a great deal of time with this discussion and will say in closing that, although I firmly believe that nasal obstructions do affect the eye, yet we should be careful in the treatment used for the relief of nasal obstructions, lest they produce or aggravate the symptoms we desire to relieve. Iodide has a marked effect upon the eye, and when applied to the nasal membrane, particularly with sensitive patients, will produce unpleasant symptoms. In treating nasal troubles physicians should never allow their patients to snuff liquids through the nose, as it is one of the most frequent causes of otitis media. We seldom or never find a normal nasal function with tuberculosis, and there is no question in my mind that catarrh, throat diseases, bronchitis, asthma and lung troubles, generally are affected, if not produced, by nasal obstructions.

Dr. G. M. Haywood: He spoke about the use of cocaine. I find that the use of eucain in the nose is almost as satisfactory as cocaine, without getting the systemic effects. With regard to the hæmorrhage you can, with very little hæmorrhage, remove polypi by the use of supra-renal capsule and painlessly with the addition of cocain or eucain, while with the latter you have no systemic effects.

Dr. E. D. Brooks: I wish my use of eucain was as satisfactory. In a number of cases I have been woefully disappointed, and my patients have complained of the pain, though I always use a saturated solution, apply it on cotton pledgets and leave them in contact with the site of the operation for a much longer time than is necessary with cocaine. Per-

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haps my failure is due to my not having used supra-renal extract in conjunction.

Dr. G. M. Haywood: I would like to hear the experience of the rest of the members with eucain. It takes longer to get the complete anæsthetic effect, but I am very much pleased with it in operations on the nose, and also some work on the eye.

Dr. H. D. Schenck: I have used eucain "B" in a number of instances when operating about the eye, and have had no trouble with it. It has been fully as satisfactory as an anæsthetic as cocaine.

Dr. J. L. Moffat: I have had systemic depression from fresh 1 per cent. solution of eucain B.

Dr. E. D. Brooks: How about the effect upon the nose?

Dr. J. L. Moffat: I have not tried it.

Dr. B. S. Stephenson: I have used eucain satisfactorily, but I had a preparation from one druggist that did not do its work. The patient said it hurt terribly, and I think that is Dr. Brooks' experience. I got a new preparation at another drug store and have had no trouble since, but I use it after using the supra-renal capsule extract.

Dr. B. W. James: I used Parke Davis & Co.'s cocaine and have never seen any ill effects. I have not used eucain because I have been so well satisfied with cocaine.

Dr. B. S. Stephenson: I would like to ask whether any one has used eucain before using supra-renal extract, and whether the effect was any different. I have used it and have had no trouble since the one experience mentioned.

Dr. G. M. Haywood: I have had two cases that had been under treatment several months for nasal trouble where I found the nose completely filled with polypi. I sprayed it with an alkaline spray, used my air-compressor and sprayed the nostrils with eucain. Then I packed in around the polypi cotton dipped in the supra-renal capsule solution, then the eucain, making a combination. I then removed a large number of polypi, touched the base with ferrum pyrine and no hæmorrhage followed. The man was told by a surgeon that he would have to stay in the city several days.

I removed a spur in the case of a young lady a day or two afterwards. It took me a long time to anæsthetize with eucain. I had to use the air-compressor and blow the eucain in, but the spur was removed without any feeling of pain.

Dr. N. Smilie: I might say as regards the criticism about the use of supra-renal, that my case was a little before the day of this latter preparation, as far as my knowledge is concerned. We were not using it at that time, but I have since then in many cases after the manner the doctor has suggested.

In the Hahnemann Hospital, in Philadelphia, we use cocaine *ad libitum* in the eye without any bad effects. I cannot recall one case in which there were bad effects from its use. But we use eucain preferably in the nose, because of the deeper and longer lasting anæsthetic effect.

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REFLEXES DUE TO ENLARGEMENT OF THE MIDDLE TURBINATED BODY.

FRED. D. LEWIS, M. D.,

Buffalo, N. Y.

AT a meeting of a society of this nature, the membership of which consists of specialists, it is instructive and interesting to listen to, and debate, papers on rare and unusual conditions, that we may recognize them more readily and treat them more intelligently. To have presented to us instruments of new device and greater efficacy, that operations may be performed with more thoroughness, greater skill and a certainty of better results to our patients, and with less danger and discomfort to them. It is also well, and of quite as much importance, it seems to me, to review some of the conditions that present themselves more frequently in our daily work, that we may learn to analyze them more carefully and not fall into a routine method of treatment, as we are all too prone to do. The trouble, in my opinion, with most of us is, that on the presentation of a case that exhibits symptoms that have heretofore disappeared under certain treatment, the previous successful treatment is repeated without thoroughly investigating all concomitant conditions that might lead to such special symptoms. In other words, we are satisfied to remove results without inquiring as to their cause.

I was led to the selection of this subject by a case that I treated a year ago last November, the history of which I will relate farther on in this paper.

I do not propose at this time to describe the anatomy, structure and nerve supply of this portion of the body, as that should be familiar to all of us, or can be obtained from text-books, and our time here is too limited and valuable to enter into technical details that can be obtained elsewhere.

It may be of interest to state, however, that a great variety of nasal neuroses have been reported from time to time, and the general consensus is that the large proportion of them have been attributed to enlargement of the middle turbinated body.

Case One.—The most profound reflex that I ever had to deal with was some six years ago. The woman, who was then I should judge

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about thirty-five years of age, had consulted several physicians who advised her removal at once to the South. She had a severe cough, but raised little, had lost appetite and flesh rapidly, was pale with hectic flush. In fact, her case had been diagnosed tuberculosis, although no tubercle bacilli had been discovered or looked for, and night sweats were absent. The season of the year was late fall, and she had all preparations made to winter in a warmer climate, when a former patient of mine, who was a resident of her town, advised her to consult me. I found the left middle turbinated enormously enlarged and pressing against the septum. A slight irritation of it, with a bit of cotton on a probe, immediately produced her cough, which disappeared on the application of cocaine. She was too weak for office operation, so I had her go to the hospital, where I removed the enlargement of the bone with a snare under cocaine anæsthesia. At the end of a week she left the hospital to return home, was married within a year (she was at the time of operation a widow), and from reports of patients that come to me occasionally from her locality I learn is quite well and has had no return of her cough.

The slightest reflex for which I have operated was also a woman, who brought her daughter to me for an adenoid operation. While in the office the mother asked me to examine her own nose, and I found the left middle turbinated impinging on the septum. Although she complained of no annoying symptoms, and was in every way healthy, I advised, on general principles, the relief of the pressure by an operation. She consented, and when I saw her again a month or two later, and asked her if there was any change, she replied that she noticed she was inclined to whip the children less frequently.

Here I think there was a reflex, but so slight as simply to make her irritable, but later might have developed a serious condition.

Cases might be multiplied from my records, where the reflexes from this cause are of extremely varied character, such as asthma, aphonia, vertigo, persistent headache, etc., etc., but I will omit them and present the case referred to earlier in this paper.

Case Two,—Mr. C., November 16th, 1898, came for relief of a long lasting conjunctivitis of the left eye. There was no photophobia, only constant redness of the conjunctiva, with a good deal of lachrymation.

Refraction proved the eyes to be emetropic, but an examination of the nasal cavity revealed the left middle turbinated in close contact with the septum.

Mr. C. had consulted several physicians, some of whom were specialists, who had prescribed medicines internally and washes locally, but with absolutely no improvement. The removal of the hypertophied portion of the middle turbinated ended the case for me, as the eye symptoms rapidly disappeared and have not recurred. Some few weeks after the operation he brought his sister to me for another condition, when

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I examined his nasal cavities and prescribed a spray for a catarrhal tendency he manifested, due to his occupation, he being a dairyman and exposed to all kinds of weather, and have not seen him since.

If this paper stimulates any of the members of this Society to more careful investigation of causes, and brings out the discussion of which this subject is worthy, its mission will have been accomplished.

I feel somewhat loth to present a paper of this nature to such a body of men as we have here present, but I think we can not go over old ground too often. As I said in the beginning, brilliant operations and cures are good to listen to and remember, but our success or failure is made by the treatment of every-day cases.

I am perhaps more radical in my treatment of enlargement of the middle turbinated than most men, because I have seen such unlooked-for results. My standard is, whenever there is contact between the middle turbinated and the septum, it should be relieved, whether there are any manifest evidences of reflex disturbances or not. The simple fact of contact is not in accordance with nature's plan, and any violation of her laws must result more or less disastrously.

A peculiar fact that I have repeatedly noticed is that the left middle turbinated is more frequently the offending one. This is probably due to the fact that most deflections of the septum are to the left, thus reducing the calibre of that side.

In operating I invariably use a snare or a strong forceps, biting off with light cutting forceps any remaining irregularities. I have had sent to me heavy cutting forceps and scissors, devised for the operation, but when they are strong enough to cut through the bone they are too bulky and obstruct the vision too much to suit me.

DISCUSSION.

Dr. Irving Townsend: This question of reflex neurosis is a most interesting one, and often involves some rather obscure diagnostic points.

As Dr. Lewis states, the importance of this subject, and the great variety of symptoms resulting reflexly from intra-nasal pressure, entitles it to our careful and thoughtful consideration and study. In reference to the cases reported, the good results from the treatment employed is sufficient proof of the judgment and skill of the operator, who, by promptly recognizing and removing the *cause* of the trouble, relieved his patients from distressing symptoms that had been persistent and of long duration.

The author is to be congratulated on the excellent results obtained from his well-directed treatment, and the only criticism I can offer relates to his diagnosis and theory of reflex nervous action.

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As we all know, the production of a true reflex neurosis is the result of local irritation of the terminal branches of a nerve, through which an impulse is conveyed to a supersensitive centre in the spinal cord or brain, and then deflected through another nerve to its point of ultimate distribution. As this is a complicated process, we should try every means of tracing the *direct* relation of cause and effect, before accepting reflex action as the responsible factor.

While the first case presented many reasons for believing the cough to be of reflex origin (including Mackensie's symptom), the history fails to furnish the details necessary to *exclude* conditions directly resulting from the presence of such growths as might produce the symptoms noted. *A dry spot* in the pharynx, larynx or trachea might cause a persistent cough, which, after the removal of the nasal obstruction, would disappear very promptly. These suggestions are only made to emphasize the possibility of error, and not to discredit the diagnosis made.

The second case (which is reported as being of *possible reflex origin*), as far as the history enables me to judge, has no definite *claim* to be considered a *reflex neurosis,* as the relief of mental irritability, following the operation in the nose, would as well result from the removal of a corn, or any other cause of external irritation.

The third case was possibly one of reflex origin, but in a number of similar cases that I have treated with the same good results the conjunctivitis has been attributed to direct extension of the inflammation through the lachrymal ducts.

The author's suggestions in reference to the importance of removing hypertrophies of the turbinates in contact with the septum are approved, and his methods of operating are fully endorsed. The snare and cutting forceps are preferable, and it is very seldom that cauterization can be employed with advantage.

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KERATOMETRY AND HETEROPHORIA OF SCHOOL CHILDREN.

BY DAVID W. WELLS, M. D.,

Boston, Mass.

THE importance of examining the sight and hearing of school children having been frequently noted at previous meetings of this Society, it would seem superfluous to offer any arguments on a subject about which we are all agreed.

Last September Superintendent Perrin, of Wellesley, Mass., arranged with the writer to undertake a thorough examination of the school children of that town, numbering some seven hundred. A clerk was furnished, and for three months the writer devoted to the work about eight hours per week, the assistant working all the time the schools were in session. The method was as follows: The assistant tested the vision for distance and determined the punctum proximum for diamond type. The color sense was tested by Dr. Thompson's worsteds, a system used on the Pennsylvania railroad, and one which no color-blind person can pass. Probable astigmatism was noted if any difference could be seen in the distinctness of radiating lines.

Now commenced the oculist's part of the task. First was noted the general health, and any external trouble, especially blepharitis marginalis; then the corneal astigmatism was determined by the keratometer. When all the above data had been obtained, the child came into the dark room which had been improvised in each building, and his refraction was determined as accurately as possible with the ophthalmoscope, both by the shadow test and by the direct reading. As exact determinations were impossible in the time which could be given to each case, errors less than .50 D. were not recorded, although every refractionist knows that severe eye-strain may be caused by an astigmatism of one-half of this amount. The retina was scrutinized, any thinning of the choroid at the temporal margin of the nerve entrance being recorded. It is here that fine distinctions have to be made between the physiological and the commencing pathological.

Corneal scars, signs of disease and photophobia were recorded, and

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in many suspicious cases the child was asked if his eyes or head ached when reading.

The muscular balance of the eyes was determined by alternately covering each eye while the child "fixed" a distant and near object, and watching if the covered eye deviated. Instances of strabismus were noted and differentiated.

Lastly, and this is, perhaps, the hardest part of the oculist's work, it was decided whether the case needed treatment. In order to disarm criticism, nothing was said to the individual about the condition of his eyes, but it was left to the superintendent to notify the parents of pupils who had either defective vision or errors which, if uncorrected, menaced the comfort and efficiency of the eye.

In the first list, viz., defective vision, were included all those whose sight in either eye was only seven-tenths of normal or less. Seven-tenths vision is still useful sight, but the defect is sufficient to seriously handicap a child in competition with others possessed of normal sight. This class numbered one hundred and fifty-six (156), or twenty-three per cent. Cases of marked heterophoria, which did not fall also into class one numbered twenty (20), nearly three per cent. The third class included those whose sight was either normal or better than seven-tenths. Hypermetropia and hypermetropic astigmatism may be overcome by an excessive effort of accommodation, but the effort is a waste of nerve energy, which is apt, sooner or later, to cause some symptom of "eye-strain." This class numbered one hundred and thirty-five (135), or twenty per cent.

It might be called the "suspicious" class, and should be carefully watched and re-examined in six months to note any reduction in visual acuity.

Blepharitis marginalis and photophobia, although often concomitants of defective sight, are symptoms which demand attention on their own account. The possibility of the disease being a contagious one is a sufficient reason for excluding from the school a child so affected till an oculist has been consulted. Only thirty-one (31), four per cent. of this class, were found.

Of color blindness, fourteen cases, two per cent., were found, all males. This is in harmony with the more extensive statistics on the subject. The fact that this presumably congenital defect is almost unknown in females suggests some interesting questions concerning heredity. Although incurable, it may be of great use to the boy to know of his deficiency before deciding on his career.

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The test of hearing was limited to determining the distance at which the ticking of a watch could be heard with each ear separately. The particular watch used should be heard at fifty inches in a moderately quiet room. Five hundred and eighty-four (584), eighty-nine per cent., passed this test with both ears. In cases where the distance was only thirty-six inches, it was decided to regard the defect as sufficient to seriously interfere with the child's instruction. Fourteen, or two per cent. of such defects, were found.

SUMMARY OF WELLESLEY SCHOOLS.

Need treatment on account of defective vision,.....23%
" " " unbalanced muscles,..... 3%
" " " disease, ... 4%
May need treatment later on on account of astigmatism, marked difference in the two eyes or unbalanced muscles,..20%
Color blind, all males,..... 2%
Normal vision in both eyes,.....30%
Normal hearing in both ears,.....89%
Defective hearing,..... 2%

("Defective" means: Vision, .7 or less; Hearing, $^{36}/_{50}$ or less.)

The proper examination of a refractive case is often the work of hours, not of minutes, and there are many elements which enter into a hurried test which tend to lessen the accuracy of the results. Practically, it is better to defer the examination till the child knows his letters. Notwithstanding the accuracy one may have acquired in the objective methods of reading the refraction with an ophthalmoscope, the knowledge of what a child can see is a valuable safeguard against over-estimating nearsightedness. This especially refers to school examinations in which the use of a cycloplegic is inadmissible.

Few eyes are free from measureable defects, and statistics to be of most value should be precise in defining what is meant by the "normal" eye. In this table errors less than .50 D. have been classed with the normal.

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REFRACTION OF WELLESLEY PUPILS.

	No. Examined.	Average Age.	Normal.		Far Sight and Farsighted Astigmatism.		Near Sight and Nearsighted Astigmatism.		One Farsighted, One Nearsighted.	
Primary . . .	318	7 Years.	47	14%	228	71%	25	7%	18	5%
Intermediate.	176	11 Years.	47	26%	103	60%	15	8%	14	7%
Grammar . .	93	13 Years.	23	24%	50	53%	12	12%	8	8%
High	98	15 Years.	23	23%	53	54%	12	12%	10	10%
Total . . .	685	14 Years.	140	22%	434	63%	64	9%	50	8%

The two features of this examination which the writer believes to be unique are, the use of the keratometer and testing, though in a superficial way, for heterophoria, and it is to a consideration of the data thus obtained that it is especially desired to call your attention.

CORNEAL ASTIGMATISM BY KERATOMETER.

	+.25	+.50	+.75	+1.00 +1.25	+1.50 +1.75	+2.00 to +2.75	+3.00 to +4.00	+4.50 and more	Total.
With Rule. Axis bet. 65°–115°	145 12%	416 35%	115 10%	184 15%	56 4.7%	26 2.2%	16 1.2%	7 .6%	965 88.1%
Against Rule. Axis bet. 180°–25° Axis bet. 155°–180°	14 11%	19 1.6%	1	3	2	1			40 3.2%
Oblique. Axis bet. 35°–60° Axis bet. 120°–150°	12	19	2	11		1	6		51 4.2%
No Astigmatism.									138 11.5%
NUMBER OF EYES.									1194

Before examining these figures, it may be well to discuss the question what relation they bear to the total astigmatism, which, as we know, is the algebraic sum of the astigmatism of the anterior and posterior surfaces of the cornea and of the crystalline lens. From a critical study of this subject, the results of which were published in the Homœopathic

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Eye, Ear and Throat Journal, April, 1899, under the title, "Keratometry and Astigmatism," the writer believes that these measures should be modified according to the table of corrections given by Edward Javal, which is as follows for astigmatism. With the rule:

Corneal, ...	none	1.00	2.00	3.00	4.00	5.00	6.00
Total, ...	.75	.50	1.75	3.00	4.25	5.50	6.75

Modified in this way we obtain the following table:

PROBABLE TOTAL ASTIGMATISM COMPUTED BY JAVAL'S RULE.

	+.25	+.50 +.75	+1.00 +1.25	+1.75 +2.50	+3.00 to +4.00	+5.00 and more			Total.
With Rule.	115 10%	184 15%	56 4.7%	36 2.2%	16 1.2%	7 .6%			404 33.5%
Against Rule.	145 12%	138 11.5%	33 2.7%	6 .6%	1				323 27.9%
Oblique.	12	21	11	1		1			51 4.2%
No Astigmatism.									416 35%
Whole Number of Eyes.									1194

It is cheerfully admitted that this rule is not infallible, yet it is probably sufficiently accurate to show in a practical way what percentage of school children have astigmatism.

Heretofore it has been assumed that corneal astigmatism was a fixed condition, and when, at some subsequent sitting, a case seemed to require a different cylindric lens, the oculist has inferred that his first measurement was erroneous. While this is undoubtedly the rule, yet there are some cases, especially in adolescence, where the cornea undergoes marked change, both in the axis and in the amount of astigmatism. As an example the following case is given:

Male, aet. seventeen years.

Consulted, '93. Keratometer R. + 2.00c 80°.
L. + 3.50c 105°.

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No cycloplegic used.

℞. R. — .50 ⊃ + 1.50^{c} 95° V. 1.
L. + 250^{c} 105° V. .5.

Consulted, '97. (Keratometer not used.)

Scopolamine.

R. + 1.00 = + 1.50^{c} 75° = 1.
L. + 1.00 = + 3.50^{c} 105° = 6.

℞. R. + 50 = + 1.50^{c} 75°.
L. + 50 = + 3.50^{c} 195°.

Consulted, '99. On direct examination was surprised to note marked increase of astigmatism, which suggested using keratometer again.

Consulted, '99. Keratometer R. + 4.00^{c} 80°.
L. + 5.00^{c} 105°.
Scopolamine R. + 3.^{c} 80° = 1.
L. + 4.^{c} 105° = 1.

The suspicious fact about this case is that at no time till the last visit could V. be brought to normal in the left eye. Was it amblyopia, exanopsia or blunder ex oculist? Since '92 the writer has used the keratometer on every refraction case and is now quite frequently repeating it at subsequent visits. It has been claimed by some that the cornea takes part in accommodation because the images of the mires on the cornea can often be seen to recede and overlap one step or more during observation. This is, I believe, a misconception, the motion being due to a to and fro movement of the patient's head. This is especially noticeable in the instrument with the glass prisms instead of Wollaston.

A case of irregular corneal astigmatism seems to me worthy of notice because the patient obtained normal vision, and, secondly, because it may throw some light on those cases where keratometry seems far from right.

Case.—Male, aet. twenty-two years. Consulted, '97.

The first keratometric measures taken did *not* assist in determining the proper glasses, which were subjectively selected under a cycloplegic.

R. + 3.00 = + 3.00^{c} 10° V. = 1.
L. + 1.50 = + 1.75^{c} 135° V. = 1.

Patient was then directed to look at the 15° circle of the large disc at the four points, above, below, right and left, and the measurements were as follows:

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R. fixation central + 3.00^c 140°.
" 15° below + 2.00^c 100°.
" 15° above + 3.00^c 15°. Subj. + 3.00 = + 3.00^c 10° V. = 1.
" 15° temporal + 1.75^c 45°.
" 15° nasal + 4.00^c 120°.
L. fixation central + 1.00^c 30°.
" 15° below + 1.00^c 40°.
" 15° above + 2.00^c 170°. Subj. + 1.50 = + 1.75^c 165° V. = 1.
" 15° temporal + 1.75^c 170°.
" 15° nasal + 1.50^c 75°.

Looking over this array of figures, which would seem to be varied enough to be called "confusing," it was discovered that the measurement taken when the patient fixed a point 15° above the centre of the tube, that is, the lower part of the cornea, coincided almost exactly with the subjective tests, in both eyes. There was no heterophoria. Why should this patient, when told to fix the centre of keratometer, look through a part of his cornea 15° higher up than the part he elected to use when tested subjectively? In the right the amount of astigmatism was the same in both sections. In the left the astigmatism was + 1.00 central + 2.00 at his point of election with glasses, so that without glasses the left could see better centrally. Was this difference sufficient to cause this peculiar habit?

Muscle Balance of Wellesley Pupils.

Orthophoria: 436 = 63%.

Heterophoria as revealed by the cover test is as follows: 249 = 37%.

Exophoria, Distance			associated with	Em. H. or H. & As.	= 9
"	"	"	"	M. or M. & As.	= 3
"	"	"	"	Anisometropia	= 2
				Total	14=2.1%
"	Near	"	"	Em. H. or H. & As.	=155
"	"	"	"	M. or M. & As.	= 35
"	"	"	"	Anisometropia	= 3
				Total	210=30%
					33%
Esophoria, Distance			"	Em. H. or H. & As.	= 6
"	"	"	"	M. or M. & As.	= 0
"	"	"	"	Anisometropia	= 0
				Total	6=1%
"	Near	"	"	Em. H. or H. & As.	= 13
"	"	"	"	M. or M. & As.	= 4
"	"	"	"	Anisometropia	= 0
				Total	17=2.5%
					3.5%

Hypertropia.
1 case R. 6Δ Em. V=1.
1 case L. 5Δ Anisometropia V. R.=8. Exophoria 25° D.
" L.=9.

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It is assumed to be the common experience of all oculists that very often the heterophoria disappears with the correcting of refractive error, so that it would be difficult to estimate what percentage of this disturbance was idiopathic. In the Norris and Oliver System, p. 183, it is stated by Standish, of Boston, that the normal muscle balance is

Esoph. 1△ 2△ distanc. Exoph. 2△ 3△ at 15△ inches.

The idea that Esoph. is ever normal is open to grave question, and is negatived by the writer's clinical experience. Is it too much to say that in three-quarters of the cases it disappears after correcting the refraction under a cycloplegic?

The fact that it was present in only 2.5% of these children argues strongly against its normality. The other striking point is the prevalence of Exophoria for near, viz., 308. Does this not coincide with the general experience that so many patients *enjoy* a certain amount of Exophoria for near, and refuse correcting prisms?

DISCUSSION.

Dr. C. H. Brown: I was very much impressed with the amount of time bestowed by Dr. Wells on this work among school children. To allow eight hours a week means practically one day of each week devoted to work of a scientific nature for which there is no direct remuneration; and to continue this for three months entails more self-sacrifice than the average man is willing to give, and hence I think it no more than just that these examples of devotion to duty should receive recognition at our hands.

We are doubtless all agreed as to the obstacles which surround the examination of children, and the difficulty in many cases of arriving at an exact diagnosis. The subjective tests are oftentimes entirely out of the question, while even the objective methods are vitiated in their accuracy by the restlessness of the child and his willingness to keep his eyes fixed in one position long enough to complete the observation. And when these examinations are curtailed and hurried, as must necessarily be the case when a school full of children are waiting their turn, the embarrassments in the way seem almost insurmountable, while the stock of patience and forbearance that must be required under such circumstances does credit to Dr. Wells' kindness of heart.

The principal feature in the examination of these children is the measurement of the curvatures of the cornea by means of the keratometer. And I will take this opportunity to call attention to several sources of error which would be all the more manifest when the time for each case is limited. The position of the head is important; that is, so the cornea will be directly in the centre of the opening of the telescope of the ophthalmometer. The slightest movement of the head or

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eye will change the reading of the instrument from .50 D. to 1. D., and will vitiate the result to that extent. Another point is the change in the curvature of the cornea by the pressure of the lids, as shown after winking. Often I have seen the mires overlap and separate as I was watching them, so that I could scarcely catch them quiescent enough to determine the curvature of the meridian of least refraction, to use as a basis for measuring the excess in the meridian at right angles.

Then, too, I must add my word of corroboration to the statement that the curvatures of the cornea may vary from year to year, and thus change the amount of defect and the location of the principal meridians. So that the temporary and apparent changes in the cornea that occur during an examination, and the actual and permanent changes that take place with the flight of years, must both be kept in mind.

In order to intelligently interpret the readings of the keratometer there are two points to be remembered:

1. A small amount of lenticular astigmatism, which is nearly always present, and which is against the rule.

2. A small amount of corneal astigmatism, which is nearly always present, and which is with the rule.

In accordance with which we must deduct .50 D. from the reading of the instrument in astigmatism with the rule, and add the same amount in astigmatism against the rule.

These are only general observations, to which there are doubtless many exceptions, for the determination of which a series of investigations like the present are useful.

The examination of the muscular equilibrium is another interesting field for study, but this is a very variable quantity, allowing of marked changes from day to day. In repeating the muscle tests on several different days, I seldom find the results to agree. This is, perhaps, due to the fact that the tone and vigor of any muscle of the body is not a constant factor, but is affected by various influences, and to the further fact that repeated examinations develop or increase the strength of the muscles, while the patient better understands what is expected of him, and hence is the better able to use his eye muscles to advantage.

It is my custom to measure the refraction first, and then determine the muscular balance with these correcting lenses before the eyes. It is a well-known fact that what seemed a marked insufficiency at the first examinations gradually disappears under the influence of the correcting spheres and cylinders, until finally a condition of orthophoria is obtained without really any direct attention having been given to the muscular defect. The explanation of which to my mind is that the strain caused by the refractive error called for an excessive nervous expenditure to ciliary muscle, thus depriving the extra-ocular muscles of the full nerve supply to which they were entitled.

The systematic and periodic examinations of the eyes and ears of school children is something much to be desired, and it can be brought about only by the united action and influence of ophthalmologists, if at

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all. As a valuable step in this direction, I welcome Dr. Wells' paper, and think he deserves much credit for his unselfish work.

Dr. J. N. Anderson: Did the doctor examine the nose of these children? I saw it stated somewhere that astigmia is a movable condition in children with nasal trouble and that when the nasal disease is cured the astigmia gets better only to increase again when the nose trouble returns.

Dr. D. W. Wells: Has any one had any experience with change of astigmatism with keratometric measurements? I have not read or found anything about it, and I wish to know if it be rare or common.

Dr. C. J. Swan: I have used the keratometer for the last eight years and I have noticed changes in the readings, but unfortunately I have used four different keratometers in that time, which rather vitiates the value of my testimony. I do believe that before adult life is reached there are changes from year to year in the amount of corneal antigmatism as found by this test.

Dr. J. H. Payne: My use of the Javal instrument has been rather unsatisfactory in determining the axis of astigmatism, from the fact that I find it almost impossible to get the head perfectly level. I do not know of any head-rest that will absolutely secure a level between the two eyes. One may get a difference of many degrees by simply tipping the head. Therefore, I cannot depend on it as giving absolute measurements of the angle.

Dr. C. J. Swan: It certainly is absolutely essential to the usefulness of the test that the head be vertical. My present instrument has a narrow horizontal slit through the disc, on a level with the patient's eyes. It is not a difficult matter, as the operator peers through this slit to note and correct the position of the patient's head so that the eyes will be on a horizontal plane corresponding to the position of the slit.

Dr. D. W. Wells: As to the position of the head in these particular examinations, I had the child lifted onto a stool by one of the large boys and the head held against the head-piece of the keratometer. While the examination was made the eye remained in good position. The examinations were somewhat hurried, but I took all the time required to make a proper reading, and I secured better results than when in the office, where one *asks the patient* to hold the head against the head-rest.

I did not make examinations of the nose.

The facts noted were these: The vision was taken by an assistant and simply recorded, and the color sense also. The hearing was tested and then the child taken into a dark room provided, and I worked out the refraction as carefully as I could with skiascopy and also by direct reading; then the keratometer was used and the conclusions were arrived at, as the results of these various methods.

Dr. B. W. James: Is the doctor familiar with Stevens' method of holding the head in the examination for muscle deviations?

Dr. D. W. Wells: I am not.

Dr. B. W. James: There is an attachment with a little piece of wood

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which you grasp between the teeth which steadies the head. Then there is an head-band which goes over the whole head, and when that head-piece is put on and the teeth grasps the wood it is almost immovable, and the great point in steadying the head is by holding this wooden piece firmly between the teeth. You can see how easily that would steady the head. I have used it for those special cases that are very nervous and constantly move the head about.

Dr. C. L. Rumsey: I would like to ask Dr. Wells if he used retinoscopy and what value he found it.

Dr. D. W. Wells: In these cases?

Dr. C. L. Rumsey: Yes; used in conjunction with the Javal ophthalmometer.

Dr. D. W. Wells: The child came to me in a dark room, and there with retinoscopy and direct reading I made up the refraction in each case. I used retinoscopy in this case of irregular astigmatism, but it was too much mixed up to be of any help.

Dr. C. L. Rumsey: Did you find it valuable?

Dr. D. W. Wells: Yes; very valuable.

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1879	George S. Norton, New York, N. Y.	W. A. Phillips, Cleveland, O.		F. Park Lewis, Buffalo, N. Y.	F. Park Lewis, Buffalo, N. Y.	W. H. Woodyatt, Chicago, Ill. Frank H. Boynton, New York, N. Y. D. J. McGuire, Detroit, Mich.
1880	W. H. Woodyatt, Chicago, Ill.	Henry C. Houghton, New York, N. Y.		F. Park Lewis, Buffalo, N. Y.	F. Park, Lewis, Buffalo, N. Y.	George S. Norton, New York, N. Y. J. H. Buffum, Chicago, Ill. W. A. Phillips, Cleveland, O.
1881	W. A. Phillips, Cleveland, O.	D. J. McGuire, Detroit, Mich.		F. Park Lewis, Buffalo, N. Y.	F. Park Lewis, Buffalo, N. Y.	J. H. Buffum, Chicago, Ill. George S. Norton, New York, N; Y. J. F. Beaumont, Freeport. Ill.
1882	Henry C. Houghton, New York, N. Y.	C. Th. Liebold, New York, N. Y.		F. Park Lewis, Buffalo, N. Y.	F. Park Lewis, Buffalo, N. Y.	J. H. Buffum, Chicago, Ill. Charles Deady, New York, N. Y. W. H. Winslow, Pittsburg, Pa.
1883	C. H. Vilas, Chicago, Ill.	W. H. Winslow, Pittsburg, Pa.		F. Park Lewis, Buffalo, N. Y.	F. Park Lewis, Buffalo, N. Y.	T. P. Wilson, Ann Arbor, Mich. M. O. Terry, Utica, N. Y. James A. Campbell, St. Louis, Mo.
1884	F. Park Lewis, Buffalo, N. Y.	James A. Campbell, St. Louis, Mo.		Charles Deady, New York, N. Y.	Charles Deady, New York, N. Y.	D. J. McGuire, Detroit, Mich. Wm. P. Fowler, Rochester, N. Y. Henry C. Houghton, New York, N.Y.
1885	D. J. McGuire, Detroit, Mich.	C. W. Butler, Montclair, N. J.		Alfred Wanstall, Baltimore, Md.	George S. Norton, New York, N. Y.	W. H. Winslow, Pittsburg, Pa. H. C. Houghton, New York, N. Y. T. P. Wilson, Ann Arbor, Mich.
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1898	William R. King, Washington, D. C.	Thomas L. Shearer, Baltimore, Md.	Howard P. Bellows, Boston, Mass.	Charles H. Helfrich, New York, N. Y.	Charles H. Helfrich, New York, N. Y.	E. W. Beebe, A. B. Norton, E. J. Bissell, G. H. Quay, R. S. Copeland.
1899	Elmer J. Bissell, Rochester, N. Y.	E. W. Beebe, Milwaukee, Wis.	C. Gurnee Fellows, Chicago, Ill.	Herbert D. Schenck, Brooklyn, N. Y.	Charles H. Helfrich, New York, N. Y.	E. B. Hooker, T. M. Stewart, D. A. MacLachlan, I. C Soulé, George B. Rice.
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1901	Thomas L. Shearer, Baltimore, Md.	Thomas M. Stewart, Cincinnati, O.	F. DeW. Bates, Hamilton, Ont.	Herbert D. Schenck, Brooklyn, N. Y.	C. Gurnee Fellows, Chicago, Ill.	W. W. Blair, J. M. Patterson, F. M. Gibson, Geo. A. Suffa, H. W. Hoyt.

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Ex.—exclusively. T.—throat.
E.—eye. G.—general practice.
Ea.—ear. *—attended last meeting.
N.—nose. x—no answer returned.

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x Sherman, Le Roy B.,....355 W. 14th St., New York, N. Y.
x Short, Zuber N.,.....428 Central avenue, Hot Springs, Ark.
*x Smilie, Nathan,.....249 E. Logan Square, Philadelphia, Pa.
x Smith, J. W.,.....Main street, Vevay, Ind.
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x Sterling, Charles F.,....32 Adams avenue, W., Detroit, Mich.
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Ex. E., Ea. Van Mater, George G.,....354 Macon street, Brooklyn, N. Y.
x Vehslage, Samuel H.,..117 W. 43d street, New York, N. Y.
x Vilas, Charles H.,....2811 Cottage Grove Ave., Chicago, Ill.
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x Wright, Joseph E.,.....26 High street, Morristown, N. J.

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Ex. Ea. Houghton, Henry C.,....7 W. 39th street, New York, N. Y.

CORRESPONDING MEMBERS.

Parenteau, Daniel,.....73 Rue de Rocher, Paris, France.
Shaw, C. Knox,.....19 Upper Wimpole St., London, Eng.
Wright, Dudley,.....55 Queen Anne St., London, Eng.

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CONSTITUTION.

ARTICLE I.—NAME AND OBJECT.

This association shall be styled the American Homœopathic Ophthalmological, Otological and Laryngological Society, and its object the study of the eye, ear, nose and throat, with particular reference to Homœopathic therapeutics.

ARTICLE II.—MEMBERS.

The society shall be composed of those physicians who are already members, and of such others as may be hereafter chosen in conformity with the by-laws.

ARTICLE III.—QUORUM.

At any meeting of the society eleven members shall constitute a quorum.

ARTICLE IV.—OFFICERS.

The officers of the society shall be a president, two vice-presidents, a secretary, and a treasurer, who shall also constitute an executive committee of the society.

ARTICLE V.—AMENDMENTS.

This constitution may be altered or amended by a vote of two-thirds of all the members present at the regular annual meeting, provided that notices of such alteration or amendment shall have been given in writing at a previous annual meeting of the society.

BY-LAWS.

ARTICLE I.—MEETINGS.

This society shall hold at least one session in each year, at such time and place as may be determined upon from time to time.

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ARTICLE II.—ELECTION OF OFFICERS.

SECTION 1. The officers shall be elected by ballot at each annual meeting of the society, and shall enter upon their respective duties the first day of January following.

SEC. 2. The regular chosen officers of this Society shall constitute an executive committee, which shall arrange the business of the session, attend to matters of business not otherwise specially provided for, and perform such other duties as may by vote of the society devolve upon them.

ARTICLE III.—DUTIES OF OFFICERS.

SEC. 1. The president shall preside at the meeting of the Society, and perform such duties as may by vote of the society be devolved upon him. He shall deliver an address at the opening of each annual session, upon such subject as he may select.

SEC. 2. The vice-presidents in their order shall perform the duties of the president in his absence or disability.

SEC. 3. The secretary shall keep a record of the proceedings of the meetings, conduct the correspondence of the society, issue notice of meetings, and notify members of their election.

SEC. 4. The treasurer shall receive all money belonging to the society, shall make all disbursements under the recommendation of the president, and he shall furnish at each annual meeting a written report of the condition of the finances.

ARTICLE IV.—CENSORS.

There shall be a Board of Censors, consisting of five members, who shall receive and examine the credentials of candidates for membership, and report to the society for election such as may be found properly qualified. The members of said board shall be elected by ballot at each annual session to serve for one year from the first day of January next succeeding said election.

ARTICLE V.—MEMBERSHIP.

SEC. 1. Any regular qualified and reputable physician, endorsed by two members, may be elected to membership to this society.

SEC. 2. The admission fee of each member of the society shall be two dollars.

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SEC. 3. Members shall pay annually the sum of three dollars toward defraying the expenses of the society.

SEC. 4. The election of no member shall be considered completed until he shall have paid his admission fee and annual dues; and his membership can only be continued by the annual payment of these dues, until they are paid he may not participate in the active work of the society. He may at any time within three years, however, complete his membership by paying his dues for the current year, together with any back dues that may have accumulated against him.

SEC. 5. Members neglecting the payment of dues for three years, after proper notification from the treasurer, shall have their names dropped from the roll of membership. Any person thus dropped shall have the privilege of reinstatement by paying all arrearages, on recommendation of the board of censors.

SEC. 6. Any physician of eminent attainments in the special fields of medicine with which this society is concerned, may be elected an Honorary Member on recommendation of the board of censors at any annual meeting of the society, and shall be exempt from dues and shall have all the privileges of members, except voting and eligibility to office.

SEC. 7. Any foreign physician may be elected a Corresponding Member of the society at any annual meeting, on recommendation of the board of censors, and shall have all the privileges of members, except voting and eligibility to office.

ARTICLE VI.—RULES OF ORDER.

SEC. 1. The rules governing the deliberations of this society shall be those found in Roberts' Rules of Order.

SEC. 2. No report or paper shall be received by the society in an incomplete or unfinished condition, and the title of any proposed paper shall be forwarded to the secretary by April 1st of each year and the completed paper by May 1st.

SEC. 3. The time allowed for the presentation of any paper shall be twenty minutes. The leading discussion shall not exceed ten minutes, and all other discussion five minutes for each speaker.

ARTICLE VII.

These by-laws may be altered or amended by a vote of two-thirds of the members present at the meeting.

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STANDING RESOLUTIONS.

Adopted June 19, 1899.

"*Resolved,* That the Committee on the Nomination of Officers shall consist of all the ex-presidents of the society present at any meeting, provided that in any case less than three be present the president shall appoint from the members present a number sufficient to make the committee consist of three members."

Adopted June 16, 1900.

"*Resolved,* That all papers presented before this society shall become its property and be *first* published in its official organ; and, furthermore, be it

"*Resolved,* That the Homœopathic Eye, Ear and Throat Journal be continued as the official organ of the society."

Adopted June 19, 1900.

"*Resolved,* That the president be requested to appoint at each annual meeting a committee of three members on transportation, who shall act, so far as possible, conjointly with the same committee of the Institute."

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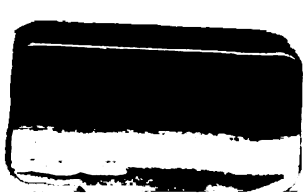

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